Binge Eating Disorder: Signs, Causes, Effects and Tips to Control

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Introduction:

Eating disorders are a group of conditions characterized by abnormal eating habits that may involve either insufficient or excessive food intake to the detriment of an individual's physical and emotional health, binge eating disorder, bulimia nervosa, anorexia nervosa being the most common specific forms in the United States. Though primarily thought of as affecting females (an estimated 5–10 million being affected in the U.S.), eating disorders affect males as well (an estimated 1 million U.S. males being affected). While proper treatment can be highly effective for many of the specific types of eating disorder, the consequences of eating disorders can be severe, including death (whether from direct medical effects of disturbed eating habits or from co-morbid conditions such as suicidal thinking). It is not known with certainty what causes eating disorders. It can be due to a combination of biological, psychological or environmental causes. Most people with eating disorders suffer also from body dysmorphic disorder, altering the way a person sees themselves. The main types of eating disorders are: anorexia nervosa, bulimia nervosa and binge eating disorder.

Anorexia nervosa is an eating disorder characterized by refusal to maintain a healthy body weight, and an obsessive fear of gaining weight due to a distorted self image which may be maintained by various cognitive biases that alter how the affected individual evaluates and thinks about her or his body, food and eating. It is a serious mental illness with a high incidence of co-morbidity and the highest mortality rate of any psychiatric disorder.

Anorexia affects the body in following ways:

Starvation:

1. Malnutrition and vitamin deficiencies.
2. Nails and hair become brittle, and skin may become dry and yellow.
3. Body breaks down muscles to provide energy.
4. Individuals may have constipation or edema, which is bloating due to water retention in tissues.
5. Severe dehydration can lead to kidney failure.

Brain and nervous tissue

1. Vitamin deficiencies cause cognitive problems like poor judgment or memory loss and other psychiatric conditions
2. Seizures
3. Damage to nerves, causing loss of feeling
4. Changes in chemical signals which impact appetite, mood and reward systems.

Hormonal changes

1. Brain senses the decrease in weight and sends signals to ovaries to decrease amount of estrogen made.
2. Decrease in estrogen causes decrease in bone density.
3. Both males and females with anorexia have loss of bone density.

Bulimia nervosa is an eating disorder characterized by the restraining of food intake for a period of time followed by an over intake or binging period that results in feelings of guilt and low self-esteem. Sufferers attempt to overcome these feeling through a number of ways. The most common form is defensive vomiting, sometimes called purging; fasting, the use of laxatives, enemas, diuretics, and over exercising are also common. Bulimia nervosa is nine times more likely to occur in women than men.

Bulimia affects the body in following ways:

1. Callused or bruised fingers: From using the fingers to vomit.
2. Salivary gland enlargement: may have puffy face.
3. Dental problems: erosion enamel, gum recession, teeth loss.
4. Damage to the esophagus from acid due to purging: internal bleeding which may lead to death.
5. Upset of the body's fluid/mineral balance, possibly causing rapid or irregular heartbeats or even a heart attack.

Binge eating disorder (BED) is the most common eating disorder in the United States affecting 3.5% of females and 2% of males and is prevalent in up to 30% of those seeking weight loss treatment. Although it is not yet classified as a separate eating disorder, it was first described in 1959 by psychiatrist and researcher Albert Stunkard as "Night Eating Syndrome" (NES), and the term "Binge Eating Disorder" was coined to describe the same binging-type eating behaviour without the exclusive nocturnal component. BED usually leads to obesity although it can occur in normal weight individuals. There may be a genetic inheritance factor involved in BED independent of other obesity risks and there is also a higher incidence of psychiatric co-morbidity.

The key features of binge eating disorder are:

- Frequent episodes of uncontrollable binge eating
- Feeling extremely distressed or upset during or after bingeing
- No regular attempts to “make up” for the binges through vomiting, fasting, or over-exercising.

Emotional Eating and food addiction

People with binge eating disorder suffer from this psychological food addiction. Like the alcoholic that can’t say no to a drink, they can’t say no to food. Often, their binge eating is triggered by a depressed or anxious mood, but they may also overeat when they’re tense, lonely, or bored. They eat to feed their feelings, rather than their bodies. The problem is that emotional eating doesn’t solve anything. It may be comforting for a brief moment, but then reality sets back in, along with regret and self-loathing. Emotional eating also leads to problems of its own—including weight gain and obesity. Unfortunately, weight gain only reinforces compulsive eating. It’s not that people with binge eating disorder don’t care about their bodies; they agonize over their ballooning weight. But the worse they feel about themselves and their appearance, the more they use food to cope. It becomes a vicious cycle: eating to feel better, feeling even worse, and then turning back to food for relief.

Signs and Symptoms of Binge Eating Disorder

People with binge eating disorder are embarrassed and ashamed of their eating habits, so they often try to hide their symptoms and eat in secret. Many binge eaters are overweight or obese, but some are of normal weight.

Behavioural symptoms of binge eating and compulsive overeating

- Inability to stop eating or control what you’re eating.
- Rapidly eating large amounts of food.
- Eating even when you’re full.
- Hiding or stockpiling food to eat later in secret.
- Eating normally around others, but gorging when you’re alone.
- Eating continuously throughout the day, with no planned mealtimes.

Emotional symptoms of binge eating and compulsive overeating

- Feeling tension that is only relieved by eating.
- Embarrassment over how much you’re eating
- Feeling numb while bingeing—like you’re not really there or you’re on auto-pilot.
- Never feeling satisfied, no matter how much you eat
- Feeling guilty, disgusted, or depressed after overeating
- Desperation to control weight and eating habits

Causes of Binge Eating

Most experts believe that it takes a combination of things to develop an eating disorder — including a person's genes, emotions, and experience.

Biological causes of binge eating disorder

Studies show that biological abnormalities contribute to binge eating. For example, the hypothalamus (the part of the brain that controls appetite) may not be sending correct messages about hunger and fullness. Researchers have also found a genetic mutation that appears to cause food addiction. Finally, there is evidence that low levels of the brain chemical serotonin play a role in compulsive eating.

Psychological causes of binge eating disorder

Depression and binge eating are strongly linked. According to the U.S. Department of Health and Human Services, up to half of all binge eaters are either depressed or have been before. There is further evidence that low self-esteem, loneliness, and body dissatisfaction are involved in compulsive overeating. People with binge eating disorder may also have trouble with impulse control and managing and expressing their feelings.

Social and cultural causes of binge eating disorder

Social pressure to be thin can add to the shame binge eaters feel and fuel their emotional eating. The way one is raised can also increase the risk for binge eating disorder. Some parents unwittingly set the stage for bingeing by using food to comfort, dismiss, or reward their children. Children who are exposed to frequent critical comments about their bodies and weight are also vulnerable. Another factor which has been linked to binge eating is sexual abuse in childhood.

Effects of Binge eating disorder

Binge eating leads to a wide variety of physical, emotional, and social problems. People with binge eating disorder report more health issues, stress, insomnia, and suicidal thoughts than people without an eating disorder. Depression, anxiety, and substance abuse are common side effects as well. Binge eating also interferes with a person's relationships and career. For example, you may skip work, school, or social activities in order to binge eat. But the most prominent effect of binge eating disorder is weight gain.

Obesity and binge eating

Over time, compulsive overeating usually leads to obesity. Obesity, in turn, causes numerous medical complications. Common physical effects of binge eating disorder include:

- Type 2 diabetes
- Gallbladder disease
- High cholesterol
- High blood pressure
- Heart disease
- Certain types of cancer
- Osteoarthritis
- Joint and muscle pain
- Gastrointestinal problems
- Sleep apnea

Tips for Overcoming Binge Eating

- **Eat breakfast.** Skipping breakfast often leads to overeating later in the day, so start your day right with a healthy meal. Eating breakfast also jump starts your metabolism in the morning. Studies show that people who eat breakfast are thinner than those who don't.
- **Avoid temptation.** You're much more likely to overeat if you have junk food, desserts, and unhealthy snacks in the house. Remove the temptation by clearing your fridge and cupboards of your favourite binge foods.
- **Stop dieting.** The deprivation and hunger of strict dieting can trigger food cravings and the urge to overeat. Instead of dieting, focus on eating in moderation. Find nutritious foods that you enjoy and avoid labelling foods as "good" or "bad."

- **Exercise.** Not only will exercise help you lost weight in a healthy way, but it also lifts depression, improves overall health, and reduces stress. The natural mood-boosting effects of exercise can help put a stop to emotional eating.
- **Distress.** Learn how to cope with stress in healthy ways that don't involve food. For some helpful stress relief strategies.

Treatment for Binge Eating Disorder

Binge eating disorder can be successfully treated in therapy. Therapy can teach you how to fight the compulsion to binge, exchange unhealthy habits for healthy ones**,** monitor your eating and moods, and develop effective stress-busting skills.

Three types of therapy are particularly helpful in the treatment of binge eating disorder and compulsive overeating:

- **Cognitive-behavioural therapy** – Cognitive-behavioural therapy focuses on the dysfunctional thoughts and behaviours involved in binge eating. One of the main goals is for you to become more self-aware of how you use food to deal with emotions. Your therapist may ask you to keep a food diary or a journal of your thoughts about eating, weight, and food. The therapist will also help you recognize your binge eating triggers and learn how to avoid or combat them. Cognitive-behavioural therapy for binge eating disorder also involves education about nutrition, healthy weight loss, and relaxation techniques.
- **Interpersonal psychotherapy** - Interpersonal psychotherapy for binge eating disorder focuses on the relationship problems and interpersonal issues that contribute to compulsive eating. Your therapist will also help you improve your communication skills and develop healthier relationships with family members and friends. As you learn how to relate better to others and get the emotional support you need, the compulsion to binge becomes more infrequent and easier to resist.
- **Dialectical behaviour therapy** – Dialectical behaviour therapy combines cognitive-behavioural techniques with mindfulness meditation. The emphasis of therapy is on teaching binge eaters how to accept themselves, tolerate stress better, and regulate their emotions. Your therapist will also address unhealthy attitudes you may have about eating, shape, and weight. Dialectical behaviour therapy typically includes both individual treatment sessions and weekly group therapy sessions.

Support for Binge Eating

Breaking the old pattern of binge eating is hard, and you may slip from time to time. This is where the support of others can really come in handy. Family, friends, and therapists can all be part of your support team. You may also find that joining a group for binge eaters is helpful. Sharing your experience with other compulsive eaters can go a long way towards reducing the stigma and loneliness you may feel.

There are many group options, including self-help support groups and more formal therapy groups.

- **Group therapy -** Group therapy sessions are led by a trained psychotherapist, and may cover everything from healthy eating to coping with the urge to binge.
- **Support groups** – Support groups for binge eating are led by trained volunteers or health professionals. Group members give and receive advice and support each other.

Medications for Binge Eating Disorder

A number of medications may be helpful in binge eating disorder treatment. Some studies have shown that medication can reduce the frequency of binge eating episodes, improve body mass index, and speed weight loss. Drug research for binge eating is still in its early stages, however, and more studies are needed.

The medications that show promise for binge eating disorder include:

- **Antidepressants** – Research shows that antidepressants decrease binge eating in people with bulimia. Antidepressants may also help people with binge eating disorder, but studies also show that relapse rates are high when the drug is discontinued.
- **Appetite suppressants** – Studies on the appetite-suppressing drug sibutramine, known by the brand name Meridia, indicate that it reduces the number of binge eating episodes and promotes weight loss.

- **Topamax** – The seizure drug topiramate, or Topamax, may decrease binge eating and increase weight loss. However, Topamax can cause serious side effects, including fatigue, dizziness, and burning or tingling sensations.

Conclusions: As a food technologist when we are concerned about the techniques and science involved in the food, we should also be aware of the proper eating patterns. BED is a compulsive behaviour, mainly in teens in which people feel out of control and powerless to stop huge amounts of food. It is mainly prevalent in females than in males. It leads to many physical, emotional and social problems. Use a team approach in treating eating disorders.

Current Status of Raisin Industry in India

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Overview of the grape and raisin industry

Grapes are one of the most popular and palatable fruits in the world. Commercial grape production in India is mainly confined in tropical belts of Maharashtra and Karnataka and about 95% grape is produced from this area. The increasing trend in area and production of grapes, reaching to 2483.1 thousand MT during 2013-14, is showing how this fruit crop is gaining popularity in India. The consumption behaviour of Indian consumers is entirely different from those in other parts of the world and about 71 per cent of total production is consumed as fresh fruit and nearly 27 per cent is dried for raisin production. A very small quantity of 1.5 per cent is used for winemaking and 0.5 per cent is used for juice.

Areas and grape varieties popular for raisin making

In India, raisins are mainly produced in Sangli, Solapur and Nashik districts of Maharashtra and Bijapur and Bagalkot districts of Karnataka. The most popular grape cultivar for raisin making is Thompson Seedless which gives light golden raisins of medium size. Popular clonal selections of Thompson Seedless viz. Tas-A-Ganesh which is bolder sized and Sonaka which is elongated are also used to prepare bold or elongated raisins. Nowadays growers are also making black raisins from Sharad Seedless and its clonal selections, which are slightly bigger in size and elongated. The baking and confectionary industries generally prefer small sized raisins, while for snack purpose elongated raisins are preferred.

Raisin Quality

The quality of raisins is evaluated in terms of the appearance, texture, free-flow (having non-sticky surface), cleanliness, flavour, and nutritional value. Both colour and texture greatly influence the marketability of the product. Irrespective of the size, raisins should be of uniform and light colour. Industries generally prefer light golden colour raisins while for snacks green raisins are preferred. Brown raisins are not in demand. A desirable raisin should be soft in texture with 14 to 16% moisture content. Softness or hardness of the raisins is partly related to grapes variety, but raisins with less than 11% moisture content also have hard mouth feel and an undesirable flavour. If the moisture content is higher than 18%, the raisins get contaminated with moulds.

Parameters affecting raisin quality

Berry size: Smaller sized berries loose water more rapidly than larger berries because of the greater relative area of skin to flesh as drying is faster they make better quality raisins.

Sugar content: Similarly berries at 20 °Brix tended to loose water more rapidly than higher maturity berries. Higher raisin recovery is related to higher TSS content in berries. Grapes with sugar to acid ratio between 21 and 33 produce good quality raisins.

Vineyard practices: Increased bunch load results in less sugars in berries which lead to low raisin recovery. The crop load on a vine is manipulated depending on the canopy to get good size and sugar in grapes. To obtain the acceptable skin colour of raisins, the grapes are harvested at physiological maturity. Bruising injuries during harvesting, handling or transportation are avoided. The vines should get normal irrigation before harvest as water stress will reduce berry size, yield and quality, while excess irrigation may reduce sugar content and delay drying period. The common practice of application of Gibberellic acid on grapes meant for fresh consumption is not followed for raisin grapes as it results in thick skinned raisins with low sugar content. Sun light exposure affects grape composition, especially the phenolic compounds in the skin, which play a significant role in browning of grapes on drying. Incidence of 'pink berry' disorder on berries also leads to browning on drying. However, this disorder is weather dependent and mainly seen in early maturing vineyards.

Grape drying requirements

The grapes should be dried at 40-45 °C temperature. If temperature is low, drying process is slow while at higher temperature raisin colour gets affected. Lower relative humidity (RH) (20-30%) enhances the grape drying. If RH

is higher, especially during night hours, the colour of raisins becomes dark and if such conditions prevail for longer duration, berry starts rotting. Grapes should not be exposed to direct sunlight during process of drying.

Grape drying sheds

In India drying of grapes in sheds is the common practice. These sheds consist of long, iron mesh platforms in 5-7 tiers on which the grape bunches are placed in single layer. The sheds have a zinc sheet roofs which protects the bunch from direct sunlight. There are no walls and the wind is allowed to flow freely over bunches. Therefore, the drying areas are away from water bodies and generally have hot, dry wind flowing at high velocity.

Grape drying method

Grape bunches are treated with alkaline solution of ethyl oleate and potassium carbonate for 2-3 minutes which creates minute cracks in berry skin and induces faster water loss from berries. After treatment grapes are spread on meshes inside the drying sheds and allowed to dry for up to 10-12 days with frequent turnings till berries attain 14-16% moisture content. A single spray of 300 ppm ascorbic acid is suggested on the third day of the drying process to reduce browning. A half strength solution of ethyl oleate and potassium carbonate is sprayed on 4^{th} or 5^{th} day of drying process on the racked bunches to speed up the drying process.

Unseasonal rains delay the drying process due to high RH and low temperatures and raisins not only become dark coloured but may also develop mould. In this situation sulphur dioxide fumigation is given to drying grapes. For such fumigation, the racks are enclosed by curtains for 2 to 3 hours, and sulphur is burnt on fire within the enclosed area. The sulphur application gives uniform golden colour to raisins and controls the microbial growth. Recently, in place of fumigation, application of liquid sulphur (polysulphide solution) is becoming popular among processors.

Raisin processing

After drying, the raisins are cleaned to remove stems, foreign materials, and off-colour raisins. They are then graded based on size and colour. Sometimes raisins are washed to remove dust which leads to rehydration and leakage of sugars. Because of rehydration one additional step, finish-drying, is needed in order to control the amount of the moisture content. Sometimes to improve the visual colour appeal, a sulphating process is generally performed by sulphur dioxide gas fumigation or by immersion of raisins in solutions of sulphur dioxide generating compounds. But before giving sulphur application, specified maximum residue limit of sulphur in raisins needs to be considered.

Packaging and storage

Raisins are very hygroscopic. Contact to moisture results in mould, rot and fermentation. During storage at ambient temperatures where RH is above 20% , raisins deteriorate in terms of colour, mouth feel, aroma etc., turns sticky and hard due to exudates syrup and moisture loss, and also get infested with mites. At temperatures < 10°C, mite growth is usually inhibited. At temperatures > 25°C and on exposure to mechanical pressure, there is a risk of candying, agglomeration, syrup formation and fermentation. Heat generally causes the risk of discoloration and hardening and the product should thus be stored away from heat sources.

The application of edible pectin coating could prevent deterioration in colour and texture of raisins. Raisin storage in darkness is found to maintain their quality. In view of the above, the final packing of produce is done in 400 gauge LDPE film bags and stored in corrugated boxes of 5 to 15 kg capacity to withstand the mechanical, climatic, biotic and chemical stresses to which raisins may be exposed during transport, storage and cargo handling and preserve the original raisin colour and prevent the attack of pests. Before transporting, the packed raisins are stored at 4°C temperature in cold storage units, where they can be kept for more than 1 year without loss in quality.

Food Safety

Quality of raisins involves food safety also. Whole chain (from production of grapes to processing) is responsible for supply of safe raisins to consumer. Presence of physical, chemical and microbiological contaminants make raisins unsafe for human consumption. Presence of any material which harms consumers' health disqualifies the raisins as quality product. The residue of agrochemicals or heavy metals should not cross the specified MRLs values for dried grapes prescribed by Codex Alimentarius in any case. Some pesticides like chlorpyrifos, cyhalothrin, flusilazole, penconazole etc. have very low limit i. e. less than 1 ppm. Limits have also been decided for presence of microbes in raisins. OchratoxinA (mycotoxin), has very low limit i.e. 20 ppb for grapes and processed

products. To suppress the growth of microbes use of sulphur dioxide is common practice. But, sulphur dioxide content in raisins never allows to cross the specified MRL values. The label must clearly show that the raisins are sulphur treated.

Trade

Trade of raisins is affected by factors like supply and demand, domestic availability, market price of raw produce, domestic market price, demand of exporters, quality of produce, weather conditions etc. The drivers of domestic trade are based in Sangli. Whole supply and market price is controlled by theses traders only. As India is producing large quantity of raisins, hence other than supply to domestic market, traders have entered in export also. Much variation is found in price realization which is directly related with quality of raisins and further use of raisins for various purposes. During 2013-14, 81 countries were destinations of Indian raisins while during year 2009-10 only 53 destination countries were recorded. A total of 31,602.24 MT raisins were exported to different countries. The produce tagged with organic has own importance in trading at international arena.

At same time the country is importing quality raisins from Iran, Afghanistan, China etc. The eating quality of imported raisins is superior. The grapes produced in these countries have good colour and aromas which reflect in raisins. So these raisins fetches very high price in Indian market compared to domestic available produce.

Challenges before the raisin industry

Grape drying processes fully dependent on presence of dry and hot conditions during the drying season. Summer showers during the month of April are becoming more common in raisin producing areas in Sangli, Solapur, Bijapur and Bagalkot districts. After summer showers temperature drops and RH increases and drying of even the best quality grapes leads to low quality raisins with more browning and moulds. The industry suffers huge losses due to quality deterioration under such conditions. There is a need to develop technology to modify the existing grape drying sheds into rapidly modifiable enclosures with controlled temperature and RH, which can be operated in case of summer showers to produce good quality raisins.

The package of practices for production of table grapes, especially to produce grapes without residues of objectionable agrochemicals, has been standardized and is in practice. The table grape industry has benefitted substantially by it. There is a need to prepare such package of practice for raisin grapes, too. Fine tuning of aspects of agrochemical residues considering processing factors is already in progress at this Centre and will improve food safety associated with raisins.

Excellent infrastructure of raisin drying sheds and cold storages have been developed in Sangli district of Maharashtra. Under normal weather conditions raisin can be dried and stored for more than a year. However, quality of raisins deteriorates during long distance transport, as non-refrigerated vehicles are used for transport of raisins. Application of sulphur is beneficial in maintaining quality during transport. Edible coating of raisins can become suitable substitute for maintain quality of raisins during transport as well as at retailing outlets.

Indian consumers consume the raisins mainly as snack, so their preferences are different. To make available raisin as per Indian preference, improvement in quality of grapes and processing is urgently needed. To support the raisin industry, food industry should come forward to use the raisins in food materials. The support of food industry will definitely encourage growing raisin industry.

Research in Health & Nutrition

Resveratrol: a treatment for depression?

Scientists have recently discovered a link between inflammation and depression, which affects approximately 148 million people in the United States. A new study finds that resveratrol – a natural anti-inflammatory agent found in the skin of red grapes – can prevent inflammation as well as depression-related behaviours in rodents exposed to a social stress.

"Our research is very relevant to today's society because it investigates potential treatments for people with an increased susceptibility to depression and related disorders that arise due to social stress," said Susan K. Wood, assistant professor at the University of South Carolina School of Medicine and leader of the research team. "We hope our findings will encourage scientists who are running clinical trials to test the effectiveness of natural anti-inflammatory agents on depression, which is currently an understudied area."

Some psychiatric disorders are known to arise from a social stress, such as bullying or the loss of a loved one. In previous research, Wood's team developed an animal model for this type of social stress in which a larger, more aggressive rat takes on the role of a bully. Some rats exposed to the bullies developed both depressive-like behaviours and inflammation while the rats that did not develop depressive-like behaviours showed no inflammation.

In the new work, the researchers repeated their experiment with one key difference: the bullied rats were given a daily dose of resveratrol roughly equivalent to the amount found in six glasses of wine. They found that resveratrol blocked the increased inflammation in the brain and also prevented the depressive-like behaviours in animals that would have normally developed those behaviours.

"Resveratrol appears to knock down inflammation throughout the body," said Julie Finnell, a doctoral student in the research team. "We found that administering resveratrol blocks the inflammation we would normally see in animals undergoing the bullying stress and brings it to control levels. We saw that consistently with IL-1ß [a pro-inflammatory protein] and many of the other inflammatory markers that we analysed."

In addition to being naturally present in the skin of red grapes and in red wine, resveratrol is also sold as supplement. Studies have shown that the natural agent might be responsible for red wine's ability to prevent blood vessel damage and reduce LDL cholesterol, and experiments using high doses of resveratrol in animals have suggested it might help protect from obesity and diabetes.

Wood said the group's findings are exciting because they show that resveratrol has anti-inflammatory potential in the brain, not just on levels of inflammation circulating in the body. "Certainly, there is a strong case being built now between clinical and preclinical work that inflammation is linked to depressive symptoms, and there is a great need for these findings to be validated in human studies," she said. The researchers are now expanding upon their rodent experiments to test whether resveratrol can reverse the effects of social stress after they develop.

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Prebiotics Help Kids Eat Less, Thwart Obesity
April 06, 2015 Food Product Design

Prebiotic fibres—which are known for aid healthy digestion, support heart health and more—have shown promise in appetite regulation in adults, but Hume wanted to evaluate its potential in children. Working with Professor Raylene Reimer, Ph.D., R.D., Faculty of Kinesiology, Hume recruited 42 children with body mass indexes (BMIs) above the 85th percentile. The children were randomized to receive the treatment, a prebiotic fibre or a placebo (maltodextrin). Both treatments were in powdered form and mixed with 250 ml of water. The children were instructed to drink the mixture 30 minutes before dinner.

At week 0 and week 16 Hume and colleagues collected measurements including a blood sample and subjective scales rating their appetite. The children were taken to a breakfast buffet at start and end of the study, where they had a choice of foods. Before and after eating, children rated their appetite levels and the researchers weighed their food. The prebiotic fibre group consumed 100 calories less at the final buffet and experienced more feelings of fullness. The fibre group rated their satiety levels before the meal higher than the maltodextrin group.

“These findings are promising, showing that intake of prebiotic fibre could cause a reduction in energy intake and body weight," said Reimer. “It’s one more tool to use in the obesity epidemic. As a dietary strategy it should be in the toolbox. Of course, we still have to address all food factors in a child’s life. But this type of small, incremental change can make a positive impact on their health."

Moving forward, the researchers said it will be important to know what happens if you give the prebiotic to normal weight kids. “In adults, we know it is safe. I wouldn’t expect to see compromised growth in normal/underweight kids either and there may be other benefits from increasing fibre intake given that very few North Americans eat enough fibre every day," she added. A second goal is for food companies to eventually put the fibre into their products.

Today’s fibre ingredients are extremely versatile and suitable for almost any food application so Hume’s hope is very realistic. We published a survival guide on fibre earlier this year that gives the inside scoop of fibre and how-to formulate it into better-for-you breakfasts and more.

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Veggies may slow cognitive decline in older adults

Something as easy as adding more spinach, kale, collards, and mustard greens to your diet may help slow cognitive decline, according to new research presented at the American Society for Nutrition (ASN) Annual Meeting during Experimental Biology 2015. The study also examined the nutrients responsible for the effect, linking vitamin K consumption to slower cognitive decline for the first time.

To conduct the study, the researchers gathered data from 954 participants from the Memory and Aging Project, which aims to identify factors associated with the maintenance of cognitive health. The participants, whose age averaged 81, reported their daily food and beverage intake by answering a detailed 144-item questionnaire at the beginning of the study. The researchers computed the total daily nutrients by combining the nutrient content for each food consumed with the number of servings eaten each day. They followed participants for two to 10 years, assessing cognition annually with a comprehensive battery of 19 tests and adjusted for age, sex, education, smoking, genetic risk for Alzheimer’s disease, and participation in physical activities when estimating the effects of diet on cognitive decline.

The researchers saw a significant decrease in the rate of cognitive decline for study participants who consumed greater amounts of green leafy vegetables. People who ate one to two servings per day had the cognitive ability of a person 11 years younger than those who consumed none. When the researchers examined individual nutrients linked with slowing cognitive decline, they found that vitamin K, lutein, folate, and beta-carotene were most likely helping to keep the brain healthy. While other studies have linked folate and beta-carotene intake with slower cognitive decline, this is the first to look at vitamin K in relation to changing cognitive abilities over time.

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Adding peanuts to a meal may benefit vascular health

A study presented at the American Society for Nutrition's Scientific Sessions & Annual Meeting during Experimental Biology 2015 shows that including peanuts as a part of a high fat meal may improve the post-meal triglyceride response and preserve endothelial function.

The purpose of this research was to evaluate vascular function after a high fat meal challenge. Fifteen overweight males were randomized to either a peanut meal containing 3 oz of ground peanuts (as a shake) or a control meal (a shake without peanuts) that were matched for energy and macronutrients. The lipid profile, glucose, and insulin were measured five times after each meal. Flow-mediated dilatation (FMD) was measured to assess vascular function.

The researchers found that the control meal decreased FMD by 1.2% compared to baseline. In contrast, there was no decrease in FMD after the peanut meal. These results demonstrate that the peanut meal maintained normal vascular function whereas the high fat-matched control meal impaired vascular function acutely.

Typically after a high fat meal, vascular function is reduced, albeit temporarily, until the fat that is in the blood (from the meal) is cleared. Strategies that can blunt this response to both dietary fat and its effect on vascular dysfunction may decrease the risk of coronary disease.
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Peanuts may offer same health benefits as other nuts
A study published in JAMA Internal Medicine shows that peanuts may have the same nutritional benefits as some pricier nuts, making peanuts' health benefits more accessible to lower-income consumers.

"Botanically, peanuts are not nuts, but nutritionally they are very similar to tree nuts, and other studies have shown their benefits," said Meir Stampfer, professor of nutrition and epidemiology at the Harvard T.H. Chan School of Public Health. The researchers looked at nut and peanut consumption in two large groups of people spanning geographic, racial, ethnic, and income boundaries:

- 72,000 Americans, aged 40–79, living in 12 Southern states. Most lived on low incomes and two-thirds were African American.
- 135,000 men and women in Shanghai, China, aged 40–74.

The researchers used surveys to tally nut and peanut consumption. They followed the groups for several years and counted how many participants died and from what causes. In the U.S. Southern states group, those who regularly ate peanuts were 21% less likely to have died of any cause over a period of about five years. In the Chinese groups, who were followed for six to 12 years, the death rate in nut-eaters was 17% lower.

For all the groups, the researchers accounted for unhealthy influences like smoking, obesity, high blood pressure, and diabetes, which were especially common in the Southern states group. The researchers noted that the diversity of the participants in this study is important. Those in the earlier studies were mostly Caucasian health professionals who were more educated and earned higher incomes than most people in the Southern states group.

However, because this study is observational, the researchers can't truly be certain that it is the peanuts that are causing the health benefits.

IFT Weekly April 22, 2015
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High-fat dairy products linked to reduced type 2 diabetes risk

April 2, 2015 Science Daily

Consumption of high-fat yoghurt and cheese are linked to a reduction in the risk of type 2 diabetes by as much as a fifth, according to new research. High meat consumption, on the other hand, is linked to a higher risk.

Consumption of high-fat yoghurt and cheese are linked to a reduction in the risk of type 2 diabetes by as much as a fifth, according to new research from Lund University in Sweden. High meat consumption, on the other hand, is linked to a higher risk. The findings, which have been published in the American Journal of Clinical Nutrition, are in line with previous studies of eating habits that indicated a link between high consumption of dairy products and a reduced risk of type 2 diabetes.

However, the new study indicates that it is high-fat dairy products specifically that are associated with reduced risk. "Those who ate the most high-fat dairy products had a 23 per cent lower risk of developing type 2 diabetes than those who ate the least. High meat consumption was linked to an increased risk of type 2 diabetes regardless of the fat content of the meat," said Ulrika Ericson, who conducted the study.

The researchers studied the eating habits of 27,000 individuals aged 45 to 74. The participants took part in the Malmö Diet and Cancer study in the early 1990s, in which they provided details of their eating habits. Twenty years on, over ten per cent -- 2 860 people -- had developed type 2 diabetes.

The aim of the study has been to clarify the significance of fat in food for the risk of developing type 2 diabetes. Instead of focusing on the total intake of saturated fat, the researchers looked at different sources of saturated fat. Both meat and dairy products contain saturated fat, but certain saturated fatty acids are particularly common in dairy products. This difference could be one of the reasons why most studies show that those who eat meat are at higher risk of type 2 diabetes, whereas those who eat a lot of dairy products appear to have a lower risk.

"When we investigated the consumption of saturated fatty acids that are slightly more common in dairy products than in meat, we observed a link with a reduced risk of type 2 diabetes. However, we have not ruled out the possibility that other components of dairy products such as yoghurt and cheese may have contributed to our results. We have taken into account many dietary and lifestyle factors in our analysis, such as fermentation, calcium, vitamin D and physical activity. However, there may be other factors that we have not been able to measure that are shared by those who eat large quantities of high-fat dairy products. Moreover, different food components can interact with each other. For example, in one study, saturated fat in cheese appeared to have less of a cholesterol-raising effect than saturated fat in butter. "Our results suggest that we should not focus solely on fat, but rather consider what foods we eat. Many foodstuffs contain different components that are harmful or beneficial to health, and it is the overall balance that is important."

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Potential chemo-resistance after consuming fatty acid in fish, fish oil

April 2, 2015 Science Daily

Researchers found that consuming the fish herring and mackerel, as well as three kinds of fish oils, raised blood levels of the fatty acid 16:4(n-3), which experiments in mice suggest may induce resistance to chemotherapy used to treat cancer, according to a study published online by JAMA Oncology.

Patients with cancer often adopt lifestyle changes and those changes often include the use of supplements. But there is growing concern about the use of supplements while taking anticancer drugs and the possible effect on treatment outcomes, according to the study background. Emile E. Voest, M.D., Ph.D., of the Netherlands Cancer Institute, Amsterdam, and coauthors examined exposure to the fatty acid 16:4(n-3) after eating fish or taking fish oil.

The authors examined the rate of fish oil use among patients undergoing cancer treatment, while researchers also recruited healthy volunteers to examine blood levels of the fatty acid after ingestion of fish oils and fish. The fish oil portion included 30 healthy volunteers and the fish portion included 20 healthy volunteers.

Among 118 cancer patients who responded to a survey about the use of nutritional supplements, 35 (30 percent) reported regular use and 13 (11 percent) used supplements containing omega-3 fatty acids, according to the results.

The study found increased blood levels of the fatty acid 16:4(n-3) in healthy volunteers after the recommended daily amount of 10 mL of fish oil was administered. An almost complete normalization of blood levels was seen eight hours after the 10-mL fish oil dose was given, while a more prolonged elevation resulted after a 50-mL dose, according to the results. Eating 100 grams of herring and mackerel also increased blood levels of 16:4(n-3) compared with tuna, which did not affect blood levels, and salmon consumption, which resulted in a small, short-lived peak.

"Taken together, our findings are in line with a growing awareness of the biological activity of various fatty acids and their receptors and raise concern about the simultaneous use of chemotherapy and fish oil. Based on our findings, and until further data become available, we advise patients to temporarily avoid fish oil from the day before chemotherapy until the day thereafter," the study concludes.

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Animal study shows why long-time consumption of soy foods reduces breast cancer recurrence

April 19, 2015 Science Daily

Women diagnosed with breast cancer are often told not to eat soy foods or soy-based supplements because they can interfere with anti-estrogen treatment. But new research being presented at the American Association for Cancer Research (AACR) Annual Meeting 2015 could eventually impact that advice, because in animals, a long history of eating soy foods boosts the immune response against breast tumours, reducing cancer recurrence. The study, conducted at Georgetown Lombardi Comprehensive Cancer Center, could offer good news to some women whose diet has long contained soy.

"I am concerned that some patients may start taking soy supplements when they shouldn't and that others will stop eating soy foods when they could really benefit from them," says the study's lead investigator, Leena Hilakivi-Clarke, PhD, professor of oncology at Georgetown Lombardi.

The notion that soy, specifically genistein (an isoflavone), can stimulate the growth of breast cancer cells and disrupt anti-estrogen treatment has been based on studies in mice that do not have immune cells known as cytotoxic T cells, known to attack breast cancer. This led oncologists to advise their breast cancer patients not to eat soy foods.

In a previous study, Hilakivi-Clarke and her doctoral student Xiyuan Zhang, the lead author of the current study, confirmed that rats that consumed genistein throughout their lifetimes responded better to anti-estrogen

treatment than did control rats. They also had reduced risk of cancer recurrence. Genistein, found in soybeans, fava beans and soymilk, among other soy foods, have many biological effects that can reduce cancer risk. However, genistein also activates human estrogen receptors, mimicking estrogen, which can make existing cancer cells grow.

In this study, the researchers investigated if their previous findings could be explained by changes in tumour immune responses. While T cells can attack tumour cells, other immune cells can disable the ability of these T cells to recognize that tumours are present, allowing breast cancer to grow unchecked by the immune system.

Hilakivi-Clarke and Zhang found that in rats fed genistein since before puberty, the T cell immune response was activated already before they started treatment with tamoxifen (an anti-estrogen therapy). Also, during the treatment, the tumour's attempt to hide from an immune system attack was thwarted.

"Our results suggest that genistein's ability to activate anti-tumour immune responses and reduce expression of immunosuppressive mechanisms may explain why lifetime genistein intake reduces risk of breast cancer recurrence," Hilakivi-Clarke says. "But it is critical that genistein is consumed well before a tumor develops to program the tumour to exhibit good immune responses," Zhang adds.

The findings mirror observational studies that found women who have long been consuming more than 10 mg isoflavones daily are at reduced risk of breast cancer recurrence, compared with women who consume less than 4 mg isoflavones daily. "One cup of soymilk has about 30 mg isoflavones, the majority of which is genistein," Hilakivi-Clarke says. "This and our earlier work suggests it is okay to continue consuming soy foods during breast cancer treatment. Whether this is because of our finding related to the immune, we can't say conclusively."

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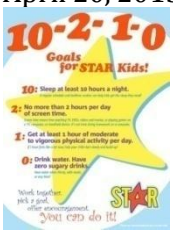
Two tested approaches to treating childhood obesity appear effective

April 20, 2015 Science Daily



A MassGeneral Hospital for Children (MGHfC) study comparing two protocols for the treatment of childhood obesity finds that both were successful in limiting one-year weight gain in obese children. Both interventions, described in a paper published in the April 20 issue of JAMA Pediatrics, combine use of information technology to provide clinicians with the most up-to-date guidelines for the management of obesity in children with tools designed to help families manage behaviors related to obesity and fitness.

"In this clinical trial, we found that an intervention that gave pediatricians point-of-care, evidence-based information on managing their obese patients and that supported behavioral change within families resulted in improved body mass index among 6- to 12-year-old children," says Elsie Taveras, MD, MPH, chief of General Pediatrics at MGHfC and lead author of the report. "Our results suggest that making it easy for clinicians to access the latest treatment guidelines using health information technology, along with providing family support for the necessary behavioural changes, can improve the quality of care for obese children and help them achieve better outcomes."

Taveras and her co-authors note that, while preventing obesity in children is important, helping those who already are obese improve their body mass index (BMI) is even more challenging. Although obesity management guidelines have been available to pediatricians for some time, many previously studied interventions addressing childhood obesity in primary care settings have not been effective. Possible reasons for this include pediatricians'

inconsistency in following obesity management guidelines and an over-reliance on in-person guidance by study clinicians. The current investigation -- entitled the Study of Technology to Accelerate Research (STAR) -- used an electronic health record to provide physicians with clinical decision-support tools and information and offered two levels of support to patients and families.

Participants were recruited at 14 pediatric primary care practices of Harvard Vanguard Medical Associates, a multispecialty group practice in eastern Massachusetts. The practices were randomly assigned to one of three groups, two which provided interventions based on clinical decision support -- the use of health information technology to provide clinicians with individualized data and guidelines to guide patient care decisions -- and a control group that provided usual care. Parents of children who met eligibility standards -- those ages 6 through 12 considered to be obese based on a previously recorded body mass index at or above the 95th percentile for their age and sex -- were contacted about their interest in the study prior to an upcoming well-child visit. A total of 549 children enrolled in the study -- 194 and 171 in the two intervention groups and 184 in the usual care group.

In the 10 intervention-group practices, medical assistants entered the current height and weight of participating children into the electronic health record at the start of the visit. Upon opening participating patients' charts, pediatricians received an alert if the BMI was in the obese range and were prompted to document an obesity diagnosis, discuss the importance of good nutrition and physical activity with the parents, and provide educational materials designed to help families self-manage behaviours known to contribute to obesity. At 5 of those practices, families were also assigned a health coach who contacted them by phone at 1, 3, 5 and 9 months into the study to review progress toward their goals, discuss any problems encountered and answer questions. Parents in the coaching group were also offered the opportunity to receive twice-weekly text messages or emails providing additional support and information.

At the end of the one-year study period, the average BMI increase of children in both intervention groups was significantly less that it was for those in the usual-care practice group. In addition, clinicians at intervention-group practices did a much better job of documenting patients' BMI status and the counselling they provided regarding nutrition and physical activity -- factors considered essential to "high-quality" pediatric primary care. The investigators were surprised that there was no significant difference in BMI improvement between the two intervention groups, but closer analysis revealed that children in the coaching group whose families completed all of the coaching phone calls and received the text/email messages actually had the most improved BMIs of all.

"What was also much better in the coaching group was parents' satisfaction with their health care services," adds Taveras. "While 47 percent of those in the intervention group who were not individually coached indicated they were very satisfied with the program, 81 percent of those who received the coaching were highly satisfied, something that health care systems considering similar types of interventions and those striving to provide family-centered care should take into account." She notes that future studies should investigate whether a 'larger dose' of coaching could further improve outcomes, test additional virtual tools such as teleconferencing for family support, and attempt to extend measures to manage pediatric obesity into the wider community -- all of which are being explored in a new study the team is currently conducting.

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Strength vs. endurance: Does exercise type matter in the fight against obesity?

April 23, 2015 Science Daily

Medical experts widely recommended a combined program of diet and fitness to fight obesity. But when it comes to the type of exercise most effective a reducing weight and body mass -- strength training, endurance exercise or a combination of both -- opinions vary widely on which exercise regimen is best. Now, a new clinical study by a team of Spanish researchers working as part of the Nutrition and Physical Activity Programs for Obesity Treatment project suggests that the type of exercise may be less important than previously thought.

Researchers from the Technical University of Madrid and La Paz University Hospital set out to measure whether the type of exercise -- endurance training, strength training, strength plus endurance training or simply following

government recommendations for weekly activity goals -- combined with diet made a significant difference on body weight and body composition. Their article "Change in weight and body composition in obese subjects following a hypocaloric diet plus different training programs or physical activity recommendations" is published in the Journal of Applied Physiology.

The research team followed 96 obese subjects (48 men and 48 women) ranging in age from 18 to 50 through a 22-week supervised program. All participants followed a similar reduced-calorie diet. The diet was measured to provide each individual with 30 percent fewer calories than he or she burned each day.

In addition to the diet, participants were randomly assigned to follow one of three different types of exercise training programs or to follow the American College of Sports Medicine recommendations for weekly physical activity. Subjects assigned to exercise training groups performed either endurance exercise alone (their choice of running, elliptical or cycling); strength exercises alone (shoulder press, squats, barbell row, biceps curl, lateral split, front split, bench press and French press); or a combination of strength and endurance exercises (choice of cycling, treadmill or elliptical plus squats, rowing machine, bench press and front split). All subjects performed their exercise programs three times a week for the same length of time and at the same intensity (51 minutes at 50 percent intensity during weeks 2-5; 50 minutes at 60 percent intensity in weeks 6-14; 60 minutes at 60 percent intensity in weeks 15-22).

Participants following the physical activity guidelines were advised to get 30-60 minutes of exercise on most, if not all, days of the week for a total of 200-300 minutes of moderate-intensity activity. They were also encouraged to swap walking for driving, take the steps instead of the elevator and to undergo other lifestyle interventions to increase daily activity.

Perhaps surprisingly, the outcomes for the participants -- including significant reductions in body weight, body mass index, waist circumference, total fat mass, and a significant increase in lean mass -- were positive across the board despite the differences in the type of exercise performed.

"To our knowledge, this is the first clinical trial designed to examine the effect of different physical activity interventions, in combination with a hypocaloric diet, on body weight and composition variables in obese Spanish people," the research team wrote. "The present study shows that, when adhered to alongside a hypocaloric diet, different exercise training programs (endurance, strength, or their combination) or the following of physical activity recommendations are equally efficient in terms of improving body weight and body composition variables in obesity management." They stressed the importance of adding exercise from the health point of view. "One calorie burned in exercise is not the same as one not ingested," they said.

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Vitamin D toxicity rare in people who take supplements, researchers report

April 30, 2015 Science Daily

A vitamin D level greater than 50 nanograms per milliliter is considered high. Vitamin D levels are determined by a blood test called a serum 25-hydroxyvitamin D blood test. A normal level is 20-50 ng/mL, and deficiency is considered anything less than 20 ng/mL, according the Institute of Medicine (IOM).

The researchers analyzed data collected between 2002 and 2011 from patients in the Rochester Epidemiology Project, a National Institutes of Health-funded medical records pool that makes Olmsted County, Minn., the home of Mayo Clinic, one of the few places worldwide where scientists can study virtually an entire geographic population to identify health trends. Of 20,308 measurements, 8 percent of the people who had their vitamin D measured had levels greater than 50 ng/mL, and less than 1 percent had levels over 100 ng/mL.

"We found that even in those with high levels of vitamin D over 50 ng/mL, there was not an increased risk of hypercalcemia, or elevated serum calcium, with increasing levels of vitamin D," says study co-author Thomas D.

Thacher, M.D., a family medicine expert at Mayo Clinic. Hypercalcemia, or high blood calcium, can occur when there are very high levels of vitamin D in the blood. Too much calcium in the blood can cause weakness, lead to kidney stones, and interfere with the heart and brain, and even be life threatening.

The Mayo researchers also found that women over age 65 were at the highest risk of having vitamin D levels above 50 ng/mL. The result was not surprising because that's a group that often takes vitamin D supplements, Dr. Thacher says.

Another notable outcome: The occurrence of high vitamin D levels over 50 ng/mL increased during the 10-year period of the study, from nine per 100,000 people at the start of the study up to 233 per 100,000 by the end. "We were surprised by that degree of dramatic increase in vitamin D levels," Dr. Thacher says.

Only one case over the 10-year study period was identified as true acute vitamin D toxicity; the person's vitamin D level was 364 ng/mL. The individual had been taking 50,000 international units (IU) of vitamin D supplements every day for more than three months, as well as calcium supplements. The IOM-recommended upper limit of vitamin D supplementation for people with low or deficient levels is 4,000 IU a day.

It's important for doctors to ask their patients about the doses of vitamin D supplements that they are using, Dr. Thacher says, because even capsules containing as much as 50,000 IU of vitamin D are available without prescription. If taken on a daily basis, that amount could lead to toxicity. Some natural sources of vitamin D include oily fish such as mackerel and salmon, fortified milk, and sunlight. "Our bodies will naturally produce vitamin D when our skin is exposed to sunlight, however, we don't recommend excessive exposure to sun due to the risk of skin cancer," Dr. Thacher added.

In an accompanying editorial in Mayo Clinic Proceedings, Dr. Michael F. Hollick, Ph.D., M.D., describes vitamin D's dramatic medical history, the need for judicious dosing, but the importance of vitamin D supplementation in those with low or deficient levels.

"The evidence is clear that vitamin D toxicity is one of the rarest medical conditions and is typically due to intentional or inadvertent intake of extremely high doses," writes Hollick, a professor of medicine, physiology and biophysics at Boston University School of Medicine.

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New data show that women of childbearing age need more key nutrients from vegetables

1 April 2015 Medical News Today

APRE's latest NHANES analytical data are consistent with IOM findings that women ages 19-50 do not get enough key nutrients from vegetables

A new study presented at Experimental Biology 2015 confirms that vegetable consumption is very low among women of childbearing age (WCBA), and that the nutrient-rich white potato is an important vegetable to this population's diet, particularly among subgroups with the lowest intake.

The results are consistent with the Institute of Medicine findings that mean total vegetable consumption of women ages 19 to 50 years is extremely low - with intakes at just 50% of the 2.5 cup equivalents per day recommended for most WCBA by the 2010 Dietary Guidelines for Americans (DGA). The 2010 DGA recommends about 5 cups of starchy vegetables per week, or approximately three-fourths cup per day, as part of a healthful diet.

"A nutritious diet and healthy lifestyle are crucial before, during and after pregnancy to optimize the health for both mother and child," stated Maureen Storey, PhD, co-author of the study and president and CEO of the Alliance for Potato Research and Education (APRE). "The results of APRE's study show that the intake of key nutrients from vegetables and white potatoes by women of childbearing age in general, and by non-Hispanic black women in particular, are well below adequate levels for the nutrition they need."

APRE researchers examined total vegetable and white potato (WP) consumption of WCBA, using the most recent data available from the National Health and Nutrition Examination Survey (NHANES) and the Food Pyramid Equivalents Database 2009-2010 and 2011-2012. The study authors found that, on average, WCBA consumed 1.36 cup equivalents of total vegetables. Depending on physical activity levels, the 2010 DGA recommend 2.5 to 3 cups of vegetables a day for WCBA needing 1,800-2,400 calories per day; this recommendation includes 5 to 6 cups of starchy vegetables a week. Non-Hispanic white women, Hispanic women, and women of other races consumed an average of 1.39, 1.43, and 1.46 cup equivalents of vegetables, respectively.

On average, non-Hispanic blacks consumed 1.11 cup equivalents of vegetables - significantly fewer than women of all other races. WCBA consumed about 0.31 cup equivalents of WP. According to the data, said Storey, white potato consumption is low for WCBA - about 2 cups a week, on average, or about 0.3 cups equivalents per day. Contrary to media reports, French fried potatoes are consumed in moderation - average consumption is about one-half cup a week - and can easily be incorporated into a healthy, well-balanced, nutritious diet.

Storey noted that the mean intakes of key nutrients, including potassium, dietary fibre, vitamin D, iron, and folates are lower than current recommendations for women 19-50 years old. Average intakes of potassium and dietary fiber are about half of the recommended intakes, while mean vitamin D intake is less than 30% of the recommendation.

The new study also shows that non-Hispanic black WCBA have significantly lower intake of key nutrients of concern such as potassium, dietary fibre, calcium and vitamin D. Lower consumption of potassium is especially concerning for non-Hispanic blacks because this population is already at greater risk for high blood pressure and stroke.

Affordable white potatoes are an important vegetable source of essential nutrients, such as potassium and dietary fibre. A small Russet baked potato with skin provides about 760 mg potassium and 3.2 g dietary fibre; even without the skin, the flesh of the white potato provides about 540 mg potassium and 2 grams of dietary fibre. A small serving of French fried potatoes provides 411 mg of potassium and 2.7 g fibre.

The APRE data analysis, "Total Vegetable and White Potato Consumption by Women of Childbearing Age," co-authored by Storey and Patricia Anderson, MPP, an independent consultant, will be submitted to a peer-reviewed journal.

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Can caffeine be used to treat or prevent Alzheimer's disease?

3 April 2015 Medical News Today

The proposed link between caffeine and reductions in the beta amyloid plaque accumulation characteristic of Alzheimer's disease (AD) suggest a possible role for caffeine in AD treatment. The latest evidence linking beta amyloid protein to Alzheimer's disease and exploring the relationship between caffeine and beta amyloid are featured in a review article in Journal of Caffeine Research: The International Multidisciplinary Journal of Caffeine Science, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers. The article is available free on the Journal of Caffeine Research* until May 1, 2015.

In the article "Caffeine as Treatment for Alzheimer's: A Review", Abhishek Mohan, BS, Old Dominion University (Norfolk, VA), and coauthors identify the potential opportunities for using caffeine to reduce beta amyloid levels as a means of preventing, treating, and slowing the progression of Alzheimer's disease.

"To say that strategizing medicines to treat Alzheimer's disorders is important is an understatement," says Patricia A. Broderick, PhD, Editor-in-Chief of Journal of Caffeine Research, Medical Professor in Physiology, Pharmacology & Neuroscience, The Sophie Davis School of Biomedical Education, The City College of New York, The City University of New York, and Adjunct Professor in Neurology, New York University Langone Medical Center and Comprehensive Epilepsy Center. "Moreover, to say that caffeine is just an ordinary staple in our lives, whether

caffeine is part of coffee or a chocolate bar, is also an understatement. Thus, what Dr. Mohan has published herein is elegant in its simplicity; his work is critically on target."

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New evidence for how green tea and apples could protect health

15 April 2015 Medical News Today

Scientists from the Institute of Food Research have found evidence for a mechanism by which certain food compounds could help protect our health.

The Institute of Food Research has published a new study that adds more to the growing body of evidence that certain compounds found naturally in foods have specific effects that help prevent chronic diseases. They have uncovered a mechanism by which polyphenols in green tea and apples affect a key signalling molecule, which could explain other studies that have shown how polyphenol-rich foods reduce risks of chronic diseases.
Credit: Institute of Food Research

Dietary studies have shown that people who eat the largest amounts of fruit and vegetables have a reduced risk of developing chronic conditions, such as heart disease and cancer. There could be several reasons for this. Some fruit and vegetables naturally contain high amounts of compounds called polyphenols, which could provide protective health benefits.

In this study, Dr Paul Kroon and his team at IFR have shown that polyphenols in green tea and apples block a signalling molecule called VEGF, which in the body can trigger atherosclerosis and is a target for some anti-cancer drugs.

In the body, VEGF is a main driver of blood vessel formation in these cell types via a process called angiogenesis. Angiogenesis is crucial in cancer progression, as well as in the development of atherosclerotic plaques and plaque rupture which can cause heart attacks and stroke.

Using cells derived from human blood vessels, the researchers found that low concentrations of the polyphenols epigallo-catechin gallate (EGCG) from green tea and procyanidin from apples stopped a crucial signalling function of VEGF.

Inhibition of VEGF signalling by dietary polyphenols has previously been implicated in other studies, but this study provides the first evidence that polyphenols can directly interact with VEGF to block its signals, at the levels you would see in the blood stream after eating polyphenol rich foods.

"If this effect happens in the body as well, it provides very strong evidence for a mechanism that links dietary polyphenols and beneficial health effects," said Dr Paul Kroon, Research Leader at IFR.

The polyphenols also activated another enzyme signalling system that generates nitric oxide in the blood, which helps widen the blood vessels and prevent damage. This was unexpected, as VEGF itself stimulates nitric oxide, and anti-cancer drugs that block VEGF also reduce nitric oxide, leading to an increased risk of hypertension in some users.

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$5.9 Bn US Sports Nutrition Market Unlocking Mass Appeal
27-Mar-2015 Nutra Ingredients USA

Buoyed by the continued rise of protein as a super-nutrient and a growing urgency around better fitness to stave off lifestyle diseases, sports nutrition is attracting a wider audience of consumers, according to "Trends and Developments in Sports Nutrition" from Euromonitor International.

Valued at around $5.95 billion at the end of 2014, the US retail sports nutrition market accounts for more than half of the $10 bn global market, the market analyst found. Although bodybuilders and extreme athletes remain the core buyers of sports nutrition products in the US, more mainstream consumers—from weekend warriors to emerging lifestyle fitness types—are buying into the category to support everyday health and more active lifestyles. In turn, manufacturers are increasingly targeting the mass consumer with lower priced offerings stocked in high-volume retail outlets, including superstores, supermarkets, mass merchants and drugstores/parapharmacies.

"More and more retailers are also committing shelf-space to sports nutrition, which is helping to introduce less sophisticated users to the category," Chris Schmidt, consumer health analyst at Euromonitor, told Nutra Ingredients-USA. To better cater to these channels, mass-facing brands tend to use smaller pack sizes (particularly for protein powders) and more convenient formats, including pills, shots and gels. They also tend to centre their advertising on "athletic competition rather than bodybuilding" through more recognizable, relatable team sport athletes, the report pointed out.

Manufacturers such as Muscle Milk manufacturer Cytosport (now owned by Hormel Foods Corp.) are embracing these newcomers with toned-down formulations, more convenient formats and distribution in more frequently visited grocery channels, Euromonitor found. Others, like NBTY Inc. and Iovate Health Sciences Inc. have created completely separate brands to target the less sophisticated, price-conscious users. Brands such as Body Fortress (NBTY) and Six Star (which Iovate promotes as "From the Makers of [core-facing brand] Muscletech")—both demonstrating how the industry is using this platform to introduce more niche products, including creatine and nitric oxide boosters, into the mass market.

Animal protein making a comeback; more certification ahead
Protein unsurprisingly remained the most lucrative category within sports nutrition, with global sales up 10% to reach $8.1 billion in 2014—with 65% of that coming from the US market. Schmidt said that while plant-based proteins haven't quite lived up to their hype, he anticipates more launches in the near term, likely positioned as health supplements rather than pure sports nutrition. Euromonitor has also seen a resurgence in animal protein, with some companies positioning beef protein launches as the "Paleo alternative" to whey.

"It will be interesting moving forward to see if the protein blends—with their longer, more sustained muscle-building claims—trickle down from the core users' to the more casual users' proteins powders," Schmidt said. "We also expect to see more third-party certification, as the protein spiking debacle gains more attention among less sophisticated users."

Functional food, supplement lines continue to blur
Schmidt warned that the protein category is ripe for fatigue in the future, along with continued encroachment from Big Food, given its "food-like" image. Indeed, packaged food giants such as Coca-Cola Co. and General Mills Inc. have rolled out added-protein versions of everything from milk and juice to breakfast cereal to appeal to the growing market. The increased attention on protein has even breathed new life into grocery staples such as cheese, nuts and meat—which marketers are rebranding as "naturally high in protein". As a result, products like Hormel's Rev Wraps and Kraft Foods' Oscar Mayer Portable Protein Packs (P3) are finding success, Euromonitor found. But the

lines-blurring is coming from the supplement side, too, as sports nutrition brands enter the functional food fray with non-sports-specific products, he added.

“Muscle Pharm…has recently launched a coconut water protein drink that (while mentioning recovery) is very clearly geared toward the lifestyle/functional foods crowd,” he said. “They also just announced the impending launch of a full-fledged energy drink, which along with sports drinks, is a category I think a lot more sports nutrition companies will start to target.”

Non-protein, female sports nutrition still largely untapped

Elsewhere, Euromonitor noted that non-protein products—from energy to endurance boosters—represent a vastly underexploited market. But the category’s success depends on attracting more mainstream consumers through proper education on its key ingredients. Owing in part to demonization in popular media and to a history of adulterated formulas, these products’ negative mainstream reputation will likely be helped by the emergence of banned substance-free certification as an industry standard, Euromonitor found. Moreover, multiple brands have invested in public outreach, including public sampling at races and public fitness events.

“Explaining the science and provenance of the ingredients to more casual users, while providing an opportunity to experience their benefits, should help cement key ingredients’ legitimacy among consumers,” wrote the report’s authors.

Female sports nutrition represents another under-exploited area for marketers, Euromonitor said. As so-called functional fitness overtakes simple weight management techniques, more women are incorporating resistance training into their workouts, providing a big opportunity to promote the recovery benefits of protein.

Still, relatively few female-focused products vary greatly from the male-oriented versions, Euromonitor noted. And while non-protein products often have lower stimulant loads and more thermogenic and metabolism-boosting ingredients, the most distinguishing factor for many is a smaller serving size and more marketing emphasis on slimming and toning. Looking ahead, the growing popularity of rigorous, regimented fitness programs like high-intensity interval training (which the American College of Sports Medicine dubbed its number two fitness trend for 2015) present an opportunity to educate female consumers on energy- and endurance-boosting supplements, such as creatine and beta alanine.

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Great Economical & Clinical Benefit: Garlic is an effective & safe approach for BP Management, says meta-analysis

21-Apr-2015 Nutra Ingredients USA

Dietary supplements with garlic (Allium sativum) may beneficially affect blood pressure for hypertensives, says a meta-analysis of 7 randomized controlled trials.

Data published in Phytomedicine indicated that garlic supplements could reduce systolic and diastolic blood pressure by an average of 6.71 mmHg and 4.79 mmHg, respectively. “The present meta-analysis suggests that garlic is an effective and safe approach for the management of hypertension, which may be an alternative therapy in patients with a history of AEs related to antihypertensive drugs,” wrote the authors.

Allicin

Consumer awareness of the health benefits of garlic, mostly in terms of cardiovascular and immune system health, has benefited the supplements industry, particularly since consumers seek the benefits of garlic without the odors that accompany the fresh bulb. The benefits have been linked to the compound allicin, which is not found in fresh garlic; It is only formed when garlic is crushed, which breaks down a compound called diallyl sulphide.

Study details
Led by scientists from the China Academy of Chinese Medical Sciences, the authors searched PubMed, the Cochrane Library and EMBASE for appropriate articles and found seven randomized, placebo-controlled trials comparing garlic vs. a placebo in hypertensives. Pooling the data indicated that, compared with placebo, garlic was associated with significant lowering of both systolic and diastolic blood pressure. In addition, no serious adverse events were reported in any of the studies.

"A recent meta-analysis of 147 randomized trials totalling 958,000 people revealed that a reduction of SBP by 10 mmHg or DBP by 5 mmHg by any of the main classes of antihypertensive drugs reduces CHD events (fatal and non-fatal) by about a quarter and stroke by about a third, regardless of the presence of vascular disease and of BP before treatment and with no increase in non-vascular mortality (Law et al. 2009)," wrote the authors. "Therefore, great economical and clinical benefit could be achieved with the significant BP-lowering effect of garlic. Importantly, the treatment duration of the included studies ranged from 8 to 12 weeks, and the maximum BP-lowering effects had been exerted at the end of the treatment."

Garlic and heart health
The meta-analysis adds to the large body of science supporting the cardiovascular benefits of garlic. A recent meta-analysis, published in the Journal of the Science of Food and Agriculture (doi: 10.1002/jsfa.5557), concluded that garlic may also reduce cholesterol and triglyceride levels. Researchers from Shandong University reported that, compared with placebo groups, garlic consumption is associated with a 5.4% reduction in cholesterol levels and a 6.5% reduction in triglyceride levels. Garlic has been suggested to exhibit several health benefits, including inhibiting enzymes involved in lipid synthesis, decreasing platelet aggregation, preventing lipid peroxidation, and increasing antioxidant status.

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Eating eggs linked to lower diabetes risk, says study
07-Apr-2015 Food Navigator

Eating four eggs a week could lower the risk of type 2 diabetes in men, a study has claimed.

Middle aged and older men who ate approximately four eggs per week had a 38% lower risk of type 2 diabetes (T2D) than those who only ate approximately one egg per week, said the study published in the American Journal of Clinical Nutrition. The association persisted even after factors such as physical exercise, body mass index, smoking and the consumption of fruits and vegetables were taken into consideration.

The research, which examined the eating habits of 2,332 men, aged between 42 and 60, also found a connection between egg consumption and lowered blood sugar levels. The study added that eggs contain many beneficial nutrients such as high-quality protein, fatty acids, minerals, and vitamins that could have had an effect on, for example, glucose metabolism and low-grade inflammation, and thus lower the risk of type 2 diabetes.

"In addition to cholesterol, eggs and especially egg yolks are also a rich source of many nutrients that could have a beneficial impact on health... [such as] anti-inflammatory properties," said Doctor Jyrki Virtanen at University of Eastern Finland who led the study. Eating more than four eggs a week was not shown to bring any extra benefits and those who already have type 2 diabetes should not increase their egg intake, added the team.

Possible reasons
"The prevalence of T2D is increasing around the world. Eggs are a major source of cholesterol, which has been associated with elevated blood glucose and an increased risk of T2D. "However, there are limited and conflicting data from prospective population studies on the association between egg consumption and risk of T2D," said the team.

One explanation for its findings contradicting previous studies that found a positive association between higher egg intake and risk of T2D or cardiovascular diseases was that eggs are seldom eaten in isolation. They are usually eaten as part of a mixed dish, said Virtanen. “For example, in many countries, they are eaten with processed meat… and processed meats have been linked with a higher risk of diabetes.” Also, in many studies, those who ate more eggs were also more likely to smoke and have lower leisure-time physical activity. “This was not observed in our study cohort,” it added.
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Start young to influence babies’ taste preferences
30-Mar-2015 Food Navigator

Getting children to eat vegetables is often a daily battle – but a love of healthy food can be fostered by introducing new flavours as early as possible.

Taste preferences start as early as in the womb and continually evolve - but certain moments are more crucial than others, and acting early can firmly establish appreciation of healthy foods, according to Sophie Niklaus, researcher at the Centre des Sciences du Goût et de l’Alimentation (Centre of Taste and Food Science) in Dijon. Speaking at the Méditerranée à déguster festival in Montpellier, Niklaus spoke of the Opaline cohort study which followed 300 babies from 2005 to 2011.

“We looked at all the different stages of development, the first being the sensory environment in the womb by monitoring maternal food intake in the last trimester, and while breastfeeding. Then we looked at food during weaning and finally at the family table where socialisation begins.”

Taste starts in the womb
While Niklaus said that babies were receptive to the aromas of the amniotic fluid and can even ‘memorise’ them, the researchers found no correlation between certain vegetables eaten during pregnancy and the baby’s later appreciation of that vegetable. For Niklaus, the most crucial stage is weaning: “This is the first direct oral contact that a baby has with food. It is a sensory explosion of aromas and flavours – the baby discovers not only aromas but also textures of food.”

Exposure is key
“We found that the longer a child is breastfed - more than 6 months - the more he or she will appreciate the umami taste which is tasted through glutamate receptors. This is because breast milk contains glutamates.
"This demonstrated the main mechanism at work regarding developing taste preferences: the more we are exposed to something, the more we will learn to appreciate it,” she said. In order to quantify taste preferences in babies, the scientists gave them bottles of plain water, salty water, sweet water, bitter and sour water and measured the amount consumed – the more the babies the drank, the more they appreciated the taste.

At three months babies liked both the sweet and salty solutions yet by age one there was a clear preference for salty. The researchers also took into account facial expressions. Interestingly, while sour and bitter flavours were less appreciated this did not seem to affect the amount consumed in the early stages – most babies made a grimace indicating distaste yet continued to drink.

The researchers found that the earlier a variety of vegetables are introduced the more likely babies are to like them – with development happening so quickly that even one month can make a difference: Babies at five months

appreciated a greater variety of vegetables than those at six months. Overall, five to seven months was the most favourable period for discovering new flavours as even bitter and sour were globally appreciated.

The four functions of food
According to the Opaline researchers the most obvious function of food is to provide nutritional sustenance but it is not the only one: Food also brings us sensory pleasure, it shapes our identity through regional cuisine and it provides an important vehicle for social interaction. “It’s impossible to imagine any kind of celebration in any society without food. We share food and eat together, and this is important for children and their dietary development. "The emotional context in which food is eaten can impact taste preferences,” said Niklaus.
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Vitamin D2 vs D3: Same for boosting D levels but D3 superior for sustaining levels?
13-Apr-2015 Nutra Ingredients USA

There is no difference between vitamin D2 and D3 for raising blood levels of the vitamin, but D3 is superior for sustaining those levels, says a new study from Argentina.
Supplementation with large doses of vitamin D2 or D3 forms boosted blood levels of the vitamin (as measured by 25(OH)D levels), but declines in 25(OH)D were more rapid in the D2 group, compared with the D3 group, report scientists from the Hospital de Clinicas in Buenos Aires and the Universidad de Buenos in Buenos Aires Fifty days after the last dose of vitamin D, the D2 group’s 25(OH)D levels were the same as those in the placebo group, but elevated levels were still observed in the D3 group, according to findings published in the European Journal of Clinical Nutrition .

“In the long term, vitamin D3 seems more appropriate to sustain adequate levels of 25(OH)D, which could be relevant for classic and non-classic effects of vitamin D,” wrote the researchers.

The sunshine vitamin
Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. Both D3 and D2 precursors are transformed in the liver and kidneys into 25- hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D).

Vitamin D deficiency in adults is reported to precipitate or exacerbate osteopenia, osteoporosis, muscle weakness, fractures, common cancers, autoimmune diseases, infectious diseases and cardiovascular diseases. There is also some evidence that the vitamin may reduce the incidence of several types of cancer and type-1 and -2 diabetes.

While our bodies do manufacture vitamin D on exposure to sunshine, the levels in some northern countries are so weak during the winter months that our body makes no vitamin D at all, meaning that dietary supplements and fortified foods are seen by many as the best way to boost intakes of vitamin D.

D2 vs D3
Several studies have reported that the D3 form of the vitamin is more potent that D2, with a study led by Robert Heaney, MD, from Creighton University in Nebraska reporting earlier this year that D3 was 87% more potent than D2 (Journal of Clinical Endocrinology & Metabolism, doi: 10.1210/jc.2010-2230). However, a study led by Michael Holick, PhD, MD, from Boston University and published in the American Journal of Clinical Nutrition indicated that fortification of orange juice with either vitamin D2 or D3 produces the same increases in blood levels as consuming either vitamin via capsules. A 2012 analysis of data from seven randomized controlled trials published in the American Journal of Clinical Nutrition indicated that the majority of the evidence supports the hypothesis that D3 is more effective than D2.

“A central point for framing the discussion about the best supplementation is the understanding about the continuous or discontinuous need of some level of vitamin D in blood,” explained the Buenos Aires-based scientists. “In addition to the well-known effect on bone, vitamin D possesses pleiotropic actions on the immune and endocrine systems, and on common cell functions, such as proliferation and differentiation. “Most of these non-classic effects depend upon the tissue-specific regulation of 1,25(OH)2D, which requires adequate blood levels of 25(OH)D as substrate, suggesting that prolonged or continuous level of 25OHD could be worthwhile.”

Study details
Led by Beatriz Oliveri, the researchers recruited 33 healthy people with an average age of 33 and divided them into three groups: One group was placebo, and the other two received a starting dose of 100,000 IU of either vitamin D2 or D3. One week later they were then given 4,800 IU per day of the same D form for a further two weeks. The participants were monitored for a total of 11 weeks.

Results showed that the starting dose of D2 and D3 boosted 25(OH)D levels to similar levels. The area under the curve for 25(OH)D was 28.6% higher for D3 compared with D2 between day 7 and day 77, said the researchers. "[A]fter a period with the same daily doses of vitamin D2 and D3, the 25(OH)D levels in the group that received vitamin D2 declined faster than the levels in the vitamin D3 group, reaching similar levels as the placebo group at the final point," they wrote.

"A different AUC among vitamin D-supplemented subjects could be clinically relevant if adequate levels of 25(OH)D were continuously required. If this were the case, vitamin D3 use could be a better option. The rationale for a need of continuous 25(OH)D is currently insufficient, although some evidence suggests that such levels are worthwhile, in particular for non-classic vitamin D effects, which seem mediated via localized autocrine or paracrine synthesis of 1,25(OH)2D depending on the adequacy of 25OHD levels."
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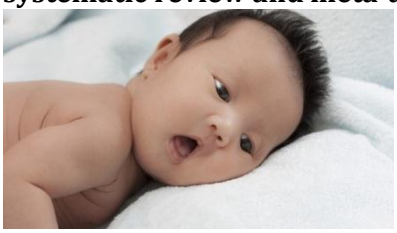
Vitamin D during pregnancy may improve newborn outcomes: Meta-analysis
15-Apr-2015 Nutra Ingredients USA

Supplements of vitamin D during pregnancy may increase birth weight and length of newborns, says a new systematic review and meta-analysis of 13 randomized controlled trials.



Scientists from Spain, the USA, and Peru report that newborns of mothers who took vitamin D supplements during pregnancy were 108 grams heavier and 0.3 cm longer than newborns from mothers who did not take the D supplements. "This systematic review and meta-analysis of RCTs showed a significant increase in circulating 25(OH)D in pregnant women who received vitamin D supplementation," wrote the authors in Fertility and Sterility . "Birth weight and birth length were slightly but significantly greater in the neonates of mothers who received vitamin D supplements, compared with those who did not."

Vitamin D
Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. Both D3 and D2 precursors are transformed in the liver and kidneys into 25- hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)2D).
Vitamin D deficiency in adults is reported to precipitate or exacerbate osteopenia, osteoporosis, muscle weakness, fractures, common cancers, autoimmune diseases, infectious diseases and cardiovascular diseases.
The new meta-analysis, led by Faustino Perez-Lopez, MD, PhD, from the University of Zaragoza Faculty of Medicine and Lozano Blesa University Hospital, also indicates potential benefits of maternal supplementation for newborns.

The researchers identified 13 randomized controlled trials that met their inclusion criteria. These trials provided data on 2,299 newborns. The data indicated that vitamin D supplementation was associated with slight but significant increases in birth weight and length.

No differences between the vitamin D and no vitamin D groups were observed for the incidence of pre-eclampsia, gestational diabetes, and preterm birth, added the researchers. "Fetal growth is a complex process dependent on many factors, including genetic background, birth interval, trophoblast implantation, placental development, nutrition, and physical activity," wrote the researchers. "Thus, vitamin D may play a minor role in fetal growth, compared with other factors.

“Fulfilling at least the recommended dietary allowance of 600 IU per day seems reasonable, until more-robust evidence is available that higher daily doses of vitamin D are beneficial. Even this minimal amount of vitamin D (600 IU per day) is not received by many pregnant women worldwide,” they concluded.

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Vitamin K1 may improve insulin sensitivity and blood sugar levels for pre-diabetics

14-Apr-2015 Nutra Ingredients USA

Supplements containing vitamin K1 (phylloquinone) may improve glycemic status and insulin sensitivity for premenopausal and pre-diabetic women, says a new study.

On the other hand, supplementation with vitamin K1 did not affect insulin resistance in the women, report scientists from the Ahvaz Jundishapur University of Medical Sciences in Iran. “To the best of our knowledge, the present study is the first one that investigated the effects of vitamin K1 supplementation on the glycemic status and insulin sensitivity via different forms of [osteocalcin] in pre-diabetic women,” wrote the researchers in the European Journal of Clinical Nutrition.

Osteocalcin (cOC) is a vitamin K-dependent protein. Without adequate vitamin K, the osteocalcin remains inactive (uncarboxylated osteocalcin, ucOC), and thus not effective. “As expected, phylloquinone supplementation for 4 weeks significantly increased serum cOC and consequently decreased ucOC and %ucOC levels. Moreover, the supplementation decreased 2-h post-oral glucose tolerance test (OGTT) glucose and insulin concentrations, and it increased [the insulin sensitivity index].”

K forms

There are two main forms of vitamin K: phylloquinone (vitamin K1) which is found in green leafy vegetables such as lettuce, broccoli and spinach, and makes up about 90% of the vitamin K in a typical Western diet; and menaquinones (vitamins K2), which make up about 10% of Western vitamin K consumption and can be synthesised in the gut by microflora.

The new study used phylloquinone from DSM Nutritional Products at a daily dose of 1,000 micrograms for four weeks. Eighty-two pre-diabetic and pre-menopausal women participated in the study and were randomly assigned to either the vitamin K1 group or placebo. Results showed that cOC levels increased as a result of K1 supplementation, while ucOC levels decreased, compared with placebo.

In addition, results of the two hour post-oral glucose tolerance test showed improvements in both glucose and insulin levels in the K1 group, compared with placebo. Data from the insulin sensitivity index (ISI) showed increases in the K1 group, they added. However, no effects on insulin resistance were observed.

“The results of this study showed that phylloquinone supplementation does not affect insulin resistance, but at the same time it could increase insulin sensitivity,” wrote the researchers. “In this study, simple methods were used to measure insulin resistance under the fasting state and fasting plus the post-absorptive state. HOMA-IR is the surrogate measure of insulin resistance at fasting state, and it tends to represent hepatic insulin resistance, whereas ISI-based whole-body measures capture both hepatic and skeletal muscle insulin resistance, glucose disposal and is a direct measurement of the β-cell response to energy stress. This finding suggests that any potential effect of phylloquinone supplementation on insulin sensitivity may affect peripheral insulin action.”

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Folic supplements could help elderly fight heat problems: Study

Nutra Ingredients USA, 02Apr2015

Folic acid supplements could help prevent heat-induced cardiovascular events in elderly people by improving blood vessel dilation, say researchers. The researchers from the Pennsylvania State University in the US said older adults exposed to heat were less able than younger people to increase skin blood flow meaning there was a greater risk of heart attacks and strokes during hot weather.

This was partly due to older blood vessels that produced less nitric oxide. Previous research by the same team suggested nitric oxide production could be upped if older adults were given tetrahydrobiopterin (BH4), which helped the enzymes involved in this process.

Folic acid increases the bioavailability of BH4 and this paper found that it also increased cutaneous vasodilation in older adults via nitric oxidedependent mechanisms. Vasodilation can refer to the widening of blood vessels as a reaction to heat, meaning the body can move the 'hot blood' to the skin where heat can be released more easily.

They said folic acid supplementation could be a cheap way of helping older adults cope during heat waves.
The study, published in the journal Clinical Science, looked at 11 healthy older adults (with an average age of 71) and 11 younger adults (average age of 22) without cardiovascular diseases in two substudies. The first looked at the impact of localised heat treatment and local delivery of 5 mM (millimolar) of the folic acid metabolite 5MTHF to the blood vessels in the skin compared to a placebo treatment.

The second study looked at wholebody heating and the impact of a five milligram supplement of folic acid or a placebo once a day for six weeks. Skin temperature was controlled in a lab using a water-perfused suit that covered the whole body except for the head, hands, feet and forearms. Both folic acid supplements and locally administered 5MTHF improved cutaneous vasodilation in the elderly group. The folic acid supplement group's nitric oxidedependent vasodilation increased in older but not younger subjects.

Since the localised treatment did not further improve vasodilation compared to the supplement group, they suggested a "ceiling effect" for the ability of the aged cutaneous vessels to vasodilate during hyperthermia. Future research should focus on the impact of such supplementation for people with cardiovascular disease as well as lifelong supplementation and vascular health, the researchers from the university's Department of Kinesiology said.

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Is fast food as effective as sports supplements for recovery?
Nutra Ingredients, 08Apr2015

Burgers and French fries may be just as effective in glycogen recovery and performance as isoenergetic sport supplements, say researchers from the University of Montana.

The small study of 11 male cyclists suggested that there was no difference between the diet groups for blood glucose and insulin responses, rates of glycogen recovery or timetrial performance. "These data indicate that short term food options to initiate glycogen resynthesis can include dietary options not typically marketed as sports nutrition products such as fast food menu items," the researchers wrote in the International Journal of Sport Nutrition and Exercise.

However, Dr Stuart Gray, senior lecturer in exercise physiology at the University of Aberdeen, said the comparison was unhelpful and a more useful methodology would have included a third group who consumed a balanced meal like grilled chicken and vegetables.

He added: “Yes glycogen recovery may be the same from a single experiment but there are many other aspects to consider in recovery. If one was to consume fast food regularly I am not sure we could safely say that there would be no adverse effects on recovery.”

The Montana researchers justified their choice saying “sensible” fast food menu items may offer a cheaper alternative to costly sports supplements. They said fast food was plagued by two major stigmas: its link to unhealthy eating, obesity and poor nutritional choices and the idea that fast food ingredients were low quality. “In contrast, the nutritional value and ingredient quality of sports supplemental food items goes mostly unchallenged because of marketing perceptions and a link to regular physical activity/exercise training.”

The protein, energy, carbohydrate and fat content of the two diets were deliberately matched; however the sodium content of the fast food menu was still significantly higher. The research acknowledged that it was known that the chronic consumption of fast food choices had a negative effect on dyslypemia, cardiovascular risk and obesity, yet said the acute consumption by young active individuals had received little attention.

They also noted that additional protein and/or amino acids may alter shortterm rates of glycogen recovery.
The researchers called the experiment a real world application of recovery strategies. Glycogen is the fuel used by muscles for energy production, and can therefore be 'exhausted' by intense exercise. The study in question The study saw the 11 cyclists complete two experimental trials, each including a 90minute Glycogen-depletion ride followed by a four hour recovery period and finally a 20kilometre time trial.

Just after each ride and two hours later participants were given either sports supplements like bars and drinks or fast food like hamburgers, French fries and hash browns. Muscle biopsies and blood tests were performed at different points in the trial.

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Dietary curcumin may boost brain DHA: Study

Nutra Ingredients 07Apr2015

Increased intake of curcumin could boost levels of docosahexaenoic acid (DHA) in the brain by enhancing its conversion from other omega3 precursors in the liver, say researchers. The data, published in Biochimica et Biophysica Acta (BBA), explored the possibility that dietary intake of curcumin increases the production of DHA by influencing precursors such ALA and DPA after previous research showed that curcumin prevents reduced DHA content in the brain following brain trauma and that curcumin plus DHA had additive beneficial effects on plasticity, behaviour and brain DHA content.

“The combined supplementation with curcumin plus DHA reduced the brain content of the DHA precursor n3 DPA, raising the question as to whether curcumin stimulates the synthesis of DHA,” noted the research team, led by senior author Dr Fernando GomezPinilla from the University of California at Los Angeles.

Using a combination of in vitro cell culture tests and animal modelling, the team found that dietary curcumin has the potential to enhance the production of DHA from its precursor, alphalinolenic acid (ALA). “We report novel data showing that curcumin elevates DHA synthesis from omega3 precursors in liver cells, and that in combination with dietary ALA, curcumin increases DHA content in vivo in both the liver and the brain,” said GomezPinilla and colleagues.
“Enzymes involved in the synthesis of DHA, FADS2 and elongase 2, were concurrently elevated, suggesting that curcumin may increase DHA content, in part, by increasing the pool of enzymes available to facilitate the conversion from either ALA or DPA,” they added.

Anxiety potential?

In addition to identifying the mechanism by which dietary curcumin could increase brain levels of DHA, the US based research team also report data that suggests dietary intake of curcumin and ALA could reduce anxiety-like behaviours. Using rat models, the team found that supplementation with curcumin and ALA reduced anxiety-like behaviours.

“Feeding animals a combination of curcumin and ALA elevated DHA content in both the liver and the brain,” said the team. “Furthermore, elevations in brain DHA were closely associated with the reduced anxietylike behaviour tested by EPM.”

Liver link?
The team also suggested that since the liver is the primary site for most of the DHA synthesis in the body; this raises the question as to whether some of the health effects of curcumin can be attributed to the synthesis of DHA. “For example, deficient liver biosynthesis of DHA was linked to cognitive impairment in Alzheimer's patients who showed reduced expression of enzymes involved in DHA synthesis,” noted the team.

“These data strongly suggest that curcumin increases the hepatic synthesis of DHA from its precursors.” Such findings have important implications for human health and the prevention of cognitive disease, suggested the team, adding that the findings may be particularly vital for people eating a plant based diet or who do not consume fish, a primary source of DHA. “Taken together, these data suggest that curcumin enhances DHA synthesis, resulting in elevated brain DHA content,” the authors concluded

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DHA supplements for lactating women may offer breast milk and baby benefits
Nutra Ingredients USA 02Apr2015

Supplementation with DHA omega3 in lactating women increases breast milk levels of the essential fatty acid, and could help infants achieve a better omega 3:6 ratio, finds new research from Abbot Nutrition.

The study, published in Prostaglandins, Leukotrienes and Essential Fatty Acids (PLEFA), investigated the effects of docosahexaenoic acid (DHA) supplementation on the fatty acid composition of breast milk and plasma concentrations in lactating women and their infants – finding that supplementation significantly improved levels of the fatty acid in breast milk and in the plasma of both mother and baby.

Led by Dr Christina Sherry from Abbott Nutrition, the research team noted that the composition of human breast milk reflects the nutritional status and dietary intake of the lactating mother – adding that DHA has gained increasing attention in pregnancy and lactation, due to its role in brain development, “as it accounts for over 10% of brain fatty acids and is essential for infant development.”

“This study demonstrates that in a population with low dietary intake of DHA, supplementation results in an increase in breast milk and maternal DHA at levels that would reflect adequate dietary intake and beneficially impact fatty acid ratios in infants important for brain development,” wrote the team – who tested mother’s with both lower (200 mg of DHA) or higher (400 mg of DHA) levels of supplementation.

“These data are the first to demonstrate that the infants from both the low and high dose supplemented mothers reported a 40% and 51%, respectively, lower n6:3 fatty acid ratio, as compared to infants from the placebo mothers,” they added.

Research details

In the study, 89 lactating women all of whom were 4–6 weeks postpartum received either a placebo, 200 mg or 400 mg DHA for six weeks alongside their usual diets. Breast milk fatty acids and maternal plasma fatty acids were measured at the beginning and end of the study and infant plasma at the end of the study.

Sherry and her team found that breast milk and maternal plasma DHA were significantly greater with 200 mg and 400 mg DHA compared with placebo – with increases of 50% and 123% respectively for breast milk and 71% and 101% for plasma. Infant plasma omega6:3 and arachidonic acid (AA):DHA were also significantly greater in the placebo group compared to both supplement group, said the team – noting that a lower omega6:3 ratio diet during brain development has been suggested to result in a greater relative percentage DHA accumulation in three critical regions of the brain, while other research has suggested that an imbalance in omega6: 3 early in life may lead to irreversible changes in the hypothalamus.

While the Sherry and her colleagues noted that findings on the long term cognitive impact of DHA supplementation during pregnancy remain are inconclusive, "the importance of adequate PUFA in the infant diet for normal growth and development is well established."

They added that 'numerous' consensus statements recommend at least 200 mg per day of DHA for pregnant and lactating women, but that data from the current research and other research show that many lactating women are only receiving around 25% of this recommended amount. Indeed, research last week reported that almost three quarters of pregnant women have an omega3 intake that does not meet European recommendations.

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Chicken collagen helps osteoarthritis, says Bioiberica

Nutra Ingredients 07Apr2015

Type II native collagen from chickens alleviates symptoms of osteoarthritis in two clinical and animal studies. Both unpublished studies were jointly conducted by Spanish firm Bioiberica using B2cool collagen and presented at the World Congress on Osteoporosis, Osteoarthritis and Muscoskeletal Diseases held in Milan last week.

In the first study researchers from the pharmacology department of Florence University found that a daily dose of 10 mg/kilogram body weight helped alleviate pain and reduce inflammation and joint degeneration in rats with osteoarthritis. The scientists injected monoiodoacetate (MIA) into the right knee joint to achieve equal levels of osteoarthritis.

For two weeks rats in the collagen group were given increasing doses of type II collagen with carboxy-methyl cellulose sodium salt (CMC) while the control group was given CMC only. The scientists then measured weight bearing capacity and motor performance. "The results show that a dose of just 10mg/Kg per day of type II native collagen (b2Cool) alleviates pain and motor skills and reduces inflammation and joint degeneration," said the study.

Human data

The second study, by Turkish researchers of Eskisehir Osmangazi University, tested the efficacy of the supplement in human subjects. Thirty nine patients diagnosed with osteoarthritis of the knee were assigned to one of two groups – over a three month period half the patients were treated with 10 mg/day of B2cool collagen and 1500 mg/day of paracetamol while the control group received 1500 mg/day of paracetamol alone.

Using the Visual Analog Scale (VAS) to measure mobility and the Western Ontario McMaster (WOMAC) to quantify pain, the scientists reported significant improvements in joint pain and mobility for the group taking collagen and paracetamol. However neither group showed an improvement in cartilage degradation. "The results show that type II native collagen can afford additional benefit to conventional therapy," said Daniel Martínez, R&D director at Bioiberica.

Type 11 native collagen is the primary protein present in joint cartilage which provides resistance and strength but in osteoarthritis the protein is broken down leading to further degradation of the joints. Type II collagen is thought to help by regulating the inflammatory response. Previous studies have found hydrolysed collagen to be beneficial for alleviating osteoporosis while calcium and collagen supplementation can help postmenopausal osteopoenia .

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What do we know about caffeine and Alzheimer's?

Nutra Ingredients USA, 01Apr2015

It is 'imperative' more research is conducted on the potential benefits of caffeine in the treatment and prevention of Alzheimer's disease, say scientists. The researchers, of various disciplines from neurosurgery to psychiatry to family and community medicine, said: "Based on the results from various studies, it is vital to focus on caffeine as a crucial part of the development of treatment and management of substances for Alzheimer's disease."

Writing in the Journal of Caffeine Research, they added: "It will also increase the number of studies and expand the knowledge base on the role of caffeine in relation to the pathology of Alzheimer's. It is therefore imperative for research to continue, geared toward investigating the potential use of caffeine in the treatment, prevention, and/or alteration of disease course for those affected by Alzheimer's."

However, they warned this research must also look at the possible side effects of chronic caffeine consumption in this patient population such as stiffening of the arteries, increased levels of homocysteine, insulin and possibly cholesterol.

Alzheimer's disease is thought to be caused by protein misfolding and is a common cause of adult dementia following the accumulation of abnormally folded beta-amyloid (βA) plaques. Research in mice suggested that caffeine helped slow down or prevent the development of βA plaques. They also pointed to evidence of caffeine's ability to fight off age-related cognitive decline and improve symptoms of confusion. Human data was needed to confirm these results, they said.

Pinpointing the cause

Scientists have looked to βA plaque accumulation as the disease's primary cause, yet the mechanism around this was still unclear. Some had suggested other factors like the generation of antibodies which attacked the βA protein were key while other researchers questioned whether βA was the primary cause at all. βA is thought to be involved in neuronal development, but its function is not actually known.

Commenting on the paper, Professor Patricia Broderick, the journal's editor-in-chief, said: "To say that strategizing medicines to treat Alzheimer's disorders is important is an understatement. Moreover, to say that caffeine is just an ordinary staple in our lives, whether caffeine is part of coffee or a chocolate bar, is also an understatement."

The review was conducted by researchers from the Old Dominion University in Virginia, New York Medical College/Westchester Medical Centre, Baylor Medical College in Texas, Medical University of South Carolina, University of Virginia Health System, University of Toronto, University of Toledo Medical School in Ohio and the Eastern Virginia Medical School and the GZA St Vincentius Hospital in Antwerp.

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What do 36 countries say about folate & folic acid preconception?

24-Apr-2015 Nutra Ingredients

Five countries recommend folate and folic acid consumption around conception above and beyond World Health Organisation (WHO) guidelines, while five others dismiss supplementation as unnecessary, report finds.

Portugese researchers looked at the recommendations of 36 different countries and found that the majority (69.4%) followed World Health Organisation (WHO) recommendations of a healthy diet plus folic acid supplementation of 400 micrograms per day (µg/d) from preconception (4–12 weeks) until the end of the first trimester of pregnancy (8–12 weeks). The report, published in Public Health Nutrition, included: Australia, Austria, Belgium – Flanders, Brazil, Bulgaria, Canada, China, Denmark, Estonia, Finland, France, Germany, Hong Kong,

Hungary, Iceland, Ireland, Italy, Japan, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Russia, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, the UK and the US.

"Interestingly, five countries (13.9 % - Finland, France, Sweden, Singapore and Taiwan) considered that a healthy diet containing adequate amounts of folate may be enough, with no need for supplementation," wrote the researchers from the Institute of Public Health of the University of Porto, University of Porto Medical School and the Universidade Católica Portuguesa/Porto. Mandatory fortification was seen in Australia, Brazil, Canada, South Africa and the US – where supplementation was also recommended.

For just over 40% of the countries, the dosage for women with a high risk of neural tube defects was up to 4–5 mg per day. All of the countries issued advice on healthy diet and/or folate-rich food.

Advice to expect

The timings for supplementation also differed across countries. About 33% said at least four weeks before conception, as stated in the D-A-CH (Germany, Austria and Switzerland) recommendations. About 27% of them stated supplementation should begin when planning pregnancy or when there was a chance of becoming pregnant/capable of becoming pregnant, in line with the US's Institute of Medicine (IOM). Nearly 14% mentioned at least 12 weeks before pregnancy. Two countries referred to 4–8 weeks or 8–12 weeks before conception, two advocated when contraception was stopped and one country recommended at least eight weeks before stopping contraception.

Most said supplementation should be maintained until the end of the first trimester (12 weeks) or almost (ten or 8–12 weeks), but Canada, China and USA recommended supplementation until the end of pregnancy.
Some countries – Singapore and South Africa – advised women to ask a health care professional.
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Food Science & Industry News

Eggs and chicken instead of beef reap major climate gains

April 1, 2015 Science Daily

Beef on our plates is one of the biggest climate villains, but that does not mean we have to adopt a vegan diet to reach climate goals. Research results from Chalmers University of Technology show that adopting a diet in which the protein derives from poultry is a smart and inexpensive way to reduce our impact on the climate.

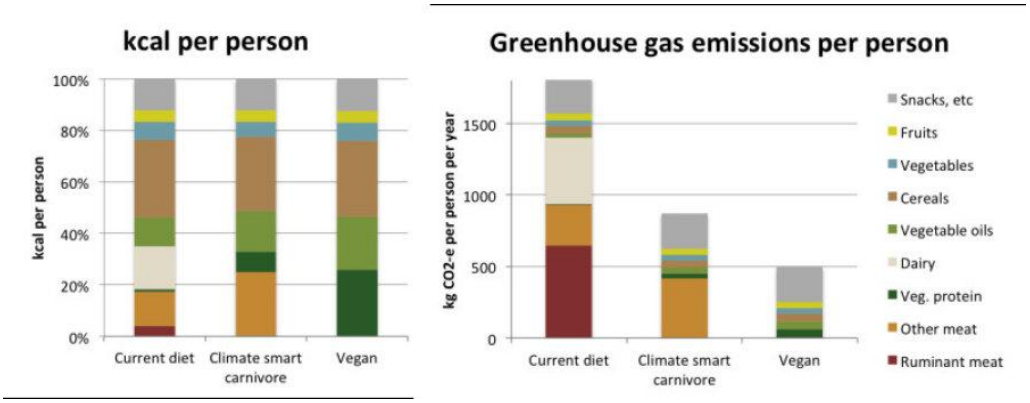

Fig: Energy intake and greenhouse gas emissions for different food types, and aggregate effects for different diets. The “current diet” refers to the average for Sweden. Smallest climate impacts are caused by the vegan diet, which consists entirely of non-livestock food. However, the major gain comes from reduced consumption of ruminants (beef and dairy). According to a previous study from Chalmers University of Technology, each person on earth can emit an average maximum of 2000 kg of carbon dioxide equivalents (CO2-e) annually by 2050, if we are to meet the 2 degrees target for the warming of the earth's average temperature.

Over the past 20 years, Europeans have increased their per capita consumption of beef by over 50 per cent. They have still not caught up with the U.S., but the trend all over the world is the same: an increasing number of people are eating an increasing amount of beef. This is a trend that runs counter to the goal of limiting the temperature increase to 2 degrees Celsius.

"Cattle ranching is already responsible for 15 per cent of the greenhouse gas emissions that humans cause. The diet we are accustomed to in wealthy countries is not consistent with our climate goals," says Chalmers researcher David Bryngelsson, who recently presented his doctoral thesis on land use, food related greenhouse gas emissions, and climate change.

Amongst other things, he has investigated various future scenarios to determine how the climate would be impacted if humans were to change their diet. People may have heard that that a vegetable diet results in less greenhouse gases. But David Bryngelsson's research shows that we can continue eating animal protein and still make a major contribution to the climate – if we replace beef with poultry and eggs, and cut down on our consumption of milk and cheese.

"Even people who eat an extremely protein-rich LCHF diet with chicken as the base make a greater contribution to the environment than vegetarians who consume a great deal of dairy products". There might be ethical objections to the current chicken industry, but David Bryngelsson believes that climate gains will prevail even with more animal-friendly production methods (read more below).

Technical improvements in the production chain can to a certain extent also reduce the food industry's climate impact, but cattle are still the biggest problem. It is difficult to change the fact that they need a lot of feed and that

they release methane as they ruminate. Furthermore, forests are being devastated to make room for the increasing number of cattle, which also impacts the climate.

"Changing our consumption is the most effective way to reduce the impact food has on the climate, and my studies show that it would also make it much less expensive to reach climate goals on a global level compared to merely making changes in the energy and transport sector."

"Since around 70 per cent of all agricultural land is currently used to raise cattle, converting to a more energy-efficient diet of poultry would free up land for cultivation of for example bioenergy", says David Bryngelsson, who has also studied that possibility.

"It has been claimed that we can cultivate bioenergy on previously unutilised, less fertile land. My models, however, show that this would result in a poorly functioning market, where land owners ultimately earn more by planting bioenergy crops on their prime land instead of using it for our crucial vegetables as is currently the case. We quite simply have to accept that cultivation of bioenergy will compete with food production for prime farming land."

David Bryngelsson's studies show that a vegan diet is still the most climate-friendly, since plant based food is more efficiently produced than livestock based, but the greatest gains are to be had by discontinuing products from cattle. The benefits to the climate when moving away from a poultry diet to a vegan diet are relatively minor compared to moving away from cattle to poultry.

"We have done our calculations based on a diet similar to the one most of us eat today, but which is still greatly beneficial to the climate. You could say that chicken is like an electrical car – it is a better alternative, yet still very similar to what we are accustomed to. And greater demand for alternative products such as vegan cheese will drive a development where they become even tastier. Poultry meat based meatballs already taste like traditional ready-made beef meatballs."

More about: Animal ethics issues and climate impact

How large of a space domesticated poultry has to move around in does not impact greenhouse gas emissions to any great extent; rather, the issue pertains more to cost. For example, if chickens are given a space that is five times larger, the space is still small in relation to the space required for feed production and will probably not noticeably affect the chickens' impact on the environment.

The difference between chicken and beef as regards area requirements and greenhouse gas emissions is so great that there is no doubt that the chicken leaves a smaller carbon footprint regardless of production method. This is because a hen can have around 150 chicks per year as compared to a cow that can give birth to not quite one calf per year, and because chicks grow extremely quickly and thus absorb a significantly greater proportion of their feed. Furthermore, cows belch large amounts of methane while chewing on their cud, which is something chickens do not do.

Intensity of emissions is basically the same for eggs and chicken meat. Eggs are thus also climate smart compared to beef and dairy products.

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Three secrets to healthier eating

April 29, 2015 Science Daily

If you want to know the secrets of healthier eating, think of the kitchen fruit bowl. A fruit bowl makes fruit more convenient, attractive, and normal to eat than if the same fruit were in the bottom of the refrigerator.

A new Cornell study analyzed 112 studies that collected information about healthy eating behaviours and found that most healthy eaters did so because a restaurant, grocery store, school cafeteria, or spouse made foods like fruits and vegetables visible and easy to reach (convenient), enticingly displayed (attractive), and appear like an obvious choice (normal). "A healthy diet can be as easy as making the healthiest choice the most convenient, attractive, and normal," said Brian Wansink, Ph.D. author of Slim by Design and Director of the Cornell Food and Brand Lab.

The study, published in Psychology and Marketing, shows that when fruit is put in a nice bowl next to your car keys -- or when a cafeteria puts it next to a well-lit cash register -- it becomes more convenient, attractive, and normal to grab a banana than the chocolate chip cookie dough ice cream in the far back of the freezer. When restaurants give the high-profit shrimp salad appetizer an enticing name, highlight it on the menu, and have the waitress point it out as a special, it becomes more convenient, attractive, and normal to order that than the deep-fried onion rings on the back of the menu.

"With these three principles, there are endless changes that can be made to lead people -- including ourselves -- to eat healthier," said Wansink. For instance, if a school wants children to drink more white milk than chocolate milk, they can make white milk more convenient (put it in the front of the cooler), more attractive (sell it in a shapely bottle), or more normal (give it half of the cooler space instead of a small corner of the cooler). In previous studies conducted by Dr. Wansink each of these changes increased white milk consumption by 30-60% in schools.

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A more substantial snack: protein & fibre serves consumers' switch to satiety
07-Apr-2015 Bakery & Snacks

Snacks that keep you fuller for longer – thanks to high protein and fibre – are becoming more important in the mainstream market place, according to DuPont Nutrition & Health.
Healthy weight management is one of the key global trends for 2015, it says, opening the door for snacks with increased satiety. In a backlash against various strict diet regimes, consumers are turning away from weight management brands and expect mainstream snack options to meet their needs instead.

Protein, snackification and weight wellness

Peter Eskild-Jensen, marketing specialist for Europe, Middle East & Africa, DuPont Nutrition & Health, told BakeryandSnacks.com that consumers want to reduce their overall calorie intake and feel fuller for longer.

"After decades of following various diet regimes, consumers are turning their attention to mainstream products that can help them manage their weight simply and conveniently," he said. "And, while many established weight management brands are seeing their popularity fade, new enterprises are emerging and capturing a share of the market.

"A growing number of the new product launches for this segment have a satiety-related claim, with on-pack messages such as 'stay full' or 'slow release energy'. "The drivers behind them are three of the top 10 food and nutrition trends identified by New Nutrition Business for 2015: protein, snackification and weight wellness."

Scientific studies suggest sustained protein intake increases satiety compared to low protein diets, added Eskild-Jensen. High protein meals have also been linked to a subsequent reduced energy intake.

Are you a 'motivated struggler' or 'enlightened active'?
DuPont research has pinpointed two target consumer groups for satiety-promoting products. "Motivated strugglers', as we call them, are the group that focuses most on weight loss as a means to health and feeling good," said Eskild-Jensen. "Secondly there is the group 'enlightened actives', who see weight control as a means to long-term health and staying attractive. In a DuPont study focusing on consumer insights, we found generally a desire for as much fibre and protein as possible, 79% and 75% respectively, while limiting sugar and fats/oils in the diets.

"We see [these] results in Europe, Middle East & Africa as more products are launched with satiety-related claims – high protein and high/added fibre – targeting weight-conscious consumers who want to put hunger on hold."
The breakfast category is already illustrating this trend, Eskild-Jensen added. "The rise of breakfast biscuits, for example, highlights the growing reliance on satisfying, protein and fibre-enriched snacks as meal alternatives."

Bakery and beyond!
Dupont illustrates how manufacturers could embrace the satiety trend with five new tried and tested concept ideas for its Litesse polydextrose dietary fibre and Supro soy protein. These include baked nutrition bars (using Litesse and Supro to create a 60% vegetable protein bar with soy protein, barley, rice and oats); double fibre buns, oatmeal breakfast biscuits, and high protein wholemeal bread. But snacks go beyond bakery: chocolate, chips, yogurt, fruit, dairy desserts, cheese, cookies, nuts, instant noodles and much more, said Eskild-Jensen.

"The high protein craze is expected to move into snack bars, cheese and beyond and we can see impressive growth in number of products launched with a high protein claim: 16% in 2009 to 27% in 2013," he said.
"There's an increased focus and awareness of the protein attributes, not just from body builders and enlightened actives, but also from wider groups of consumers. That's where bakers can use fibre and protein combinations to target the healthy living trend."
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Changing how rice is cooked could cut calories
24-Mar-2015 Food Navigator

A novel cooking and cooling process for rice could help slash the number of calories absorbed by the body by more than half by increasing levels of resistant starch, say researchers.

The relatively simple cooking method could help families and food manufacturers increase resistant starch (RS) in staple food products – meaning that less of the rice is digested and fewer calories are absorbed. Led by Sudhair A. James from the College of Chemical Sciences in Colombo, Sri Lanka, the team behind the discovery noted that in addition to consuming more fats and sugars, many people may choose to fill up on starchy carbohydrates like rice, which has about 240 calories per cup. As a result the team experimented with 38 kinds of rice to develop a new way of cooking rice that increased resistant starch content.

"Because obesity is a growing health problem, especially in many developing countries, we wanted to find food-based solutions," said James. "We discovered that increasing rice resistant starch (RS) concentrations was a novel way to approach the problem."

By using a specific heating and cooking regimen, the scientists increased the levels of RS by 'at least' ten-fold – meaning that there are less digestible calories in the rice. Indeed, the team concluded that "if the best rice variety is processed, it might reduce the calories by about 50-60%." Results from the investigation will be presented at the 249th National Meeting & Exposition of the American Chemical Society (ACS).

Reduced resistant starch
The team experimented with 38 kinds of rice from Sri Lanka, developing a new way of cooking rice that increased the RS content. The initial RS concentrations ranged from 0.30 to 4.65%, with traditional rice varieties found to contain significantly higher RS concentrations than old and improved varieties.

In this method, they added a teaspoon of coconut oil to boiling water before adding a half a cup of rice. They simmered this for 40 minutes, although it could be boiled for 20-25 minutes instead, the researchers noted. The team then refrigerated the rice for 12 hours. This novel method procedure increased the RS by 10 times for traditional, non-fortified rice, said the team. "The increase in RS content could be attributed to the increase in RS3 and RS5 types, suggesting potential to increase these types of RS in rice," wrote the authors.

Novel cooking method
James explained that the simple cooking method can make a big difference because oil enters the starch granules during cooking, changing its architecture so that it becomes resistant to the action of digestive enzymes. This means that fewer calories ultimately get absorbed into the body, he commented. "The cooling is essential because amylose, the soluble part of the starch, leaves the granules during gelatinization," James said. "Cooling for 12 hours will lead to formation of hydrogen bonds between the amylose molecules outside the rice grains which also turns it into a resistant starch."

Reheating the rice for consumption after this cooking method does not affect the RS levels, he confirmed. James suggested that the next step will be to complete studies with human subjects to learn which varieties of rice might be best suited to the calorie-reduction process. The team also will assess whether other oils besides coconut have the effect.

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Functional formulation: The latest science on nutrient delivery in foods & drinks
23-Apr-2015

Coming up with that killer idea for a cool functional food or drink that consumers will love may be a tough ask. But designing it to deliver can be even trickier. We take a look at some of the latest science on functional food formulation.

The functional food and drink market grew 25% between 2008 and 2013 reaching €249bn ($267.6bn), according to data from Euromonitor International, as consumer demand for products that deliver benefits grows significantly year-on-year. But designing new functional products to deliver a wide range of functional compounds and nutrients requires clever use of formulation.

Speaking to NutraIngredients at the recent HiE event in Amsterdam, Julian Mellentin, director of New Nutrition Business suggested that in the future, companies will have to appeal more to consumers' desires in order to be successful. "You cannot take a technology and force it down people's throats," said Mellentin. "You cannot educate

the consumer about your ingredient, because they are being bombarded with information all the time, so you just have to find what they believe in and how they connect to it."

Indeed, while coming up a great idea for a functional food or drink product, that fits with consumer demands and expectation may be a tough ask, developing that idea in to a finished product that looks, tastes, and feels great is a monumental challenge. In this special edition, we take a look at some of the latest research that could help in designing and reformulating functional foods and drinks. From co-encapsulation technologies, to multiple emulsions and the notion of using 'excipient foods', there is no shortage of research investigating new ways to deliver functional ingredients more effectively in a food or drink matrix.

Encapsulation promise

Recent research published in the Journal of Functional Foods suggested that an encapsulation complex made up of gelatin and sodium hexametaphosphate **could enable stable microencapsulation of fish oil with multiple lipophilic bioactive compounds** - suggesting that manufacturers of functional foods and supplements could use the method to include multiple vitamins and other lipophilic ingredients like curcumin and coenzyme Q10 in to an omega-3 rich encapsulate.

These ingredients are often unstable and require stabilization before being incorporated into foods," noted the team. "Since omega-3 lipids are widely used functional food ingredients and require microencapsulation for stabilization and delivery to many foods, we decided to co-encapsulate other lipophilic ingredients to create combination products containing omega-3 oil, vitamins A, D3, E and K2, coenzyme Q10 and curcumin."

Meanwhile, further research published in the same journal suggested that a newly described stable co-encapsulation of **omega-3 rich oil with probiotic bacteria could be a boon for manufacturers** looking to incorporate the functional ingredients in to functional food products.

The team behind the study explored ways to produce a co-encapsulated omega-3 and probiotic using a whey protein isolate (WPI) and gum Arabic complex (GA) – finding that omega-3 fatty acids and probiotic bacteria can form a stable co-encapsulate that can then be either spray dried or freeze dried to form a powder.

"When probiotic bacteria and omega-3 fatty acids are co-encapsulated in a single product, there may be synergistic health benefits," wrote the authors, led by Divya Eratte of Federation University Australia. "A synergetic effect between omega-3 fatty acids and probiotic bacteria during digestion has been reported, where omega-3 lipids help probiotic bacteria attach to the intestinal wall. There may also be stability benefits of co-microencapsulation."

Multiple emulsions

While encapsulation technologies could provide a great way to deliver nutrients in certain food and beverage formulations, others may be solved using other solutions – such as the use of multiple-layer emulsions.
Last year, research led by Francisco Jiménez-Colmenero from the Institute of Science and Technology Food and Nutrition in Spain suggested that **better use of multiple emulsion systems could help industry to develop better functional foods** by reducing levels of fat, sugar and salt whilst also providing ways to incorporate bioactive compounds.

"Since multiple emulsions offer the opportunity to enclose nutritional and bioactive compounds, and these emulsions could be used as food ingredients, they offer an interesting approach among the technological strategies used to optimize dietary active components in new food systems such as functional foods," said the Spanish researcher.

While many firms have explored the potential of multiple emulsion technology, Jiménez-Colmenero noted that most research has so far focused on the design, formation, structure and properties of water-oil-water (W1/O/W2) emulsions themselves in order to achieve specific properties such as high stability and encapsulation efficiency; without considering their potential food applications.

"As a result, it is not known how they will behave in a food matrix or hence what impact they will have on the technological, sensory and microbiological properties of complex matrixes of real foods," he said.

Excipient foods
In addition to the utilisation of encapsulation and emulsion technologies to better deliver functional ingredients, researchers have suggested that improving the design of functional and finished products, by better understanding the role of excipient foods, could help increase the bioavailability of functional nutrients.

While the use of specially designed delivery systems for such ingredients has been widely investigated and used by industry to improve dispersibility, stability, food compatibility, and bioavailability, **the potential for 'excipient foods' to improve bioavailability within a finished product less utilised** , explained Professor David Julian McClements, writing in Current Opinion in Food Science.

"Recent studies have shown that the bioavailability of certain nutraceuticals can be increased by consuming them with other foods," he said. "Excipient foods can also be designed to improve the efficacy of nutraceuticals whose bioavailability is normally limited by other factors, such as gastrointestinal transformation or poor absorption. The bioavailability of nutraceuticals with poor absorption characteristics may be improved by consuming them with food matrices containing components that increase cell permeability or reduce efflux mechanisms," McClements added.

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Heat-resistant beans are 'front-line defence' to global warming
27-Mar-2015 Food Navigator USA
Thirty varieties of heat resistant beans will be able to survive rising temperatures and keep feeding millions, say scientists.

Beans are a food staple for 400 million people in the developing world and have long been hailed as 'the meat of the poor' thanks to their high iron and protein content, according to researchers from CGIAR, a global research partnership which aims to improve global nutrition and ensure sustainable management of natural resources. But climate experts have warned that bean crops will not withstand rising temperatures, and have predicted a 50% loss of bean-producing areas in eastern and central Africa by 2050.

Therefore, CGIAR scientists began crossing common bean types with hardier ones and have produced heat-resistant hybrids. Andy Jarvis, a CGIAR climate change expert said: "As a result of this breakthrough, beans need not be the casualty of global warming that they seemed destined to be, but rather can offer a climate-friendly option for farmers struggling to cope with rising temperatures."

The CGIAR database: Full of beans
Many of the heat tolerant beans are crosses between the 'common bean' – including pinto, black, white and kidney beans – and the tepary bean, a hardy strain that has been cultivated since pre-Colombian times in the arid climate of northern Mexico and south-west USA. The researchers searched CGIAR's gene bank database – which contains nearly 750,000 samples of cereals, legumes and other important food crops – to identify genomic traits that were tolerant to extreme weather conditions, such as heat, flood and drought as well as certain pests.

CGIAR executive James Wadsworth called these genebanks a "front-line defence to climate change". "The development of these heat-defying beans also highlights what can be achieved when we invest in modern science to find solutions to urgent challenges, with expected economic benefits vastly exceeding the costs of investment in the research," he said.

Already producing higher yields

The researchers tested their beans in greenhouses in Colombia, adjusting the night-time temperatures to see how much heat the beans could withstand. Beebe said: "We confirmed that 30 heat-tolerant lines are productive even with night-time temperatures above 22 degrees Celsius. Normally, bean yields start to falter when the temperatures exceed 18 or 19 degrees Celsius."

One of the bean varieties developed by CGIAR scientists has already been introduced into the commercial food chain in Nicaragua. When tested in Costa Rica it yielded twice as many beans as other varieties cultivated by farmers there. This showed there was an immediate need for the resistant beans, Beebe said.
"Heat may already be hurting bean production in Central America far more than we thought and farmers could benefit from adopting the new heat-beater beans right now."

CGIAR identified the most vulnerable areas - where bean production was likely to be seriously disrupted by rising temperatures - as Nicaragua, Haiti, Brazil, and Honduras, and Malawi and the Democratic Republic of the Congo in Africa. The scientists say they have also been breeding high-iron varieties to tackle malnutrition in developing countries where half of children are iron deficient.
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Forget about your woes? Probiotics may lower focus on bad feelings & experiences
16-Apr-2015 Nutra Ingredients

Supplementation with a multi-species probiotic may be associated with lower feelings of sadness and less focus on bad feelings and experiences from the past, say researchers.
The new findings, published in the Brain, Behaviour, and Immunity, examined the effects of supplementation with a multispecies probiotic on negative moods, focusing in particular on the activation of negative dysfunctional patterns of thinking that are triggered by subtle changes in mood (known as cognitive reactivity). This focus on probiotic supplementation and cognitive reactivity (CR) comes after previous research into the role of the human microbiota in cognitive and affective functioning led suggestions that probiotic supplementation could act as an adjuvant strategy to improve or prevent depression.

Led by Laura Steenbergen and Lorenza Colzato from the Leiden Institute of Brain and Cognition, the new data suggests that people may focus less on bad feelings and experiences from the past (a process known as rumination) after four weeks of probiotics administration. “Rumination is one of the most predictive vulnerability markers of depression” says Steenbergen. “Persistent ruminative thoughts often precede and predict episodes of depression.”

“Even if preliminary, these results provide the first evidence that the intake of probiotics may help reduce negative thoughts associated with sad mood,” added Colzato. “As such, our findings shed an interesting new light on the potential of probiotics to serve as adjuvant or preventive therapy for depression.”

Research methods
The team claim to be the first to investigate whether the administration of a multispecies probiotic (Ecologic®Barrier, Winclove probiotics) containing Bifidobacterium bifidum W23, Bifidobacterium lactis W52, Lactobacillus acidophilus W37, Lactobacillus brevis W63, L. casei W56, Lactobacillus salivarius W24, and Lactococcus lactis (W19 and W58) for at least 4 weeks has a beneficial effect on rumination (defined as recurrent thoughts about possible causes and consequences of one’s distress).

The randomised, placebo controlled trial asked 40 healthy subjects to take a sachet containing powder which was mixed with lukewarm water or milk each day of the intervention. Half of the participants received a placebo powder, while the other half received the probiotics mixture. Participants were invited to the lab to fill in a questionnaire indexing sensitivity (cognitive reactivity) to depression on two occasions: one time at the beginning of the intervention and the second time after 4 weeks when the intervention was completed. In both occasions they were required.

Less rumination through probiotics
Compared to subjects who received the placebo intervention, participants who received the multispecies probiotics intervention showed significantly reduced ruminative thoughts, said the team. “Participants who

received the 4-week multispecies probiotics intervention showed a significantly reduced overall cognitive reactivity to sad mood, which was largely accounted for by reduced rumination and aggressive thoughts," they explained. The team concluded that their findings indicate that probiotics supplementation "warrants further research as a potential preventive strategy for depression."

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Smartcandy vitamin-infused kids' snack founder: 'Functional doesn't have to come in a brown paper bag'
03-Apr-2015 Food Navigator USA

Aside from making a functional, better-for-you-snack taste good, the hardest part is selling it—an even tougher proposition if your primary target market is children aged six to 18 and their moms.

But Snap Infusion's founders (parents of two boys, aged seven and eight) aim to address the disconnect between fun, tasty food and functional food with Smartcandy, a vitamin-infused snack for kids that rolled out at Target and Walmart on Feb. 1. "We've found that a lot of times stuff that tastes good isn't good for you, and stuff that's good for you often doesn't deliver on the flavour profile—or fun," co-founder Andrea Stoll tells Food Navigator-USA. "Stuff that's better for you shouldn't have to be so serious and come in a brown paper bag. We wanted to create something that delivers on the functional profile that's also fun and that kids can relate to."

Nike meets Willy Wonka

Stoll and her husband Eric Stoll launched Boston-based Snap Infusion in 2011. They debuted Supercandy a year later, a line of functional, flavourful candies infused with B vitamins, antioxidants and electrolytes for active Millennials—or as Stoll puts it, "Nike meets Willy Wonka." Not long after that, customers started asking for a kid-oriented version of the snacks. "Kids can eat Supercandy, too, but it's more focused on physical energy," Stoll says. "We wanted something dedicated to mental energy that can support kids throughout the day."

Smartcandy is formulated with a blend of Vitamin A for eye health, three B vitamins to support converting sugar and carbohydrates into sustained energy, and vitamin C for immunity. The trans fat-, high-fructose corn syrup-free candies come in four varieties: sweet and sour gummies; and Froot, a proprietary snack with a candy shell and a layer of yogurt encasing a strawberry or orange centre.

The team relied on a lot of early feedback from their home-grown focus group—the Stoll children and their friends. Out the gate one of the most popular varieties is the sour gummy. "Companies haven't nailed the sour flavor profile in a better-for-you product, so that's already standing out for us," Stoll says.

Positioned as a snack 'alternative' rather than a hard sell

The 0.5-oz. candy packs are being positioned as mainstream healthy alternatives to snacking for kids—ideal in small amounts, such as a lunchbox snack, afternoon pick-me-up or pre-soccer game snack. Smartcandy was developed within school guidelines for carbohydrates, fat and sugar. But, as Stoll notes, it's still candy—and meant to be enjoyed as part of an active lifestyle.

"We've presented Smartcandy in a way that's part of an active lifestyle," she says. "Yeah, it's candy. We're comfortable with that. There's sugar in fruit, too. You expect kids to be active in school and eating sugar and carbs to get through day. That's not something we're staying away from." In order to work the product into kids' everyday lives, the company remains heavily focused on sampling and partnerships.

In addition to sampling demos and connecting with Mommy bloggers, the brand is looking to partner with retailers and lifestyle events. "Basically we're really focused on people trying the product. It's not just connecting at point of sale," she says. "We also recently brought Smartcandy to the Kids Food Festival in New York City, where they

introduce kids to different types of food and show them how to prepare it. We want to create opportunities for them to have the product as an alternative to other things, as opposed to going for a hard sell."

Better-for-you becoming the mandate for most channels
Stoll declined to share sales or volume figures for Smartcandy or sister brand Supercandy. Less than two months after the Smartcandy rollout, Stoll says the company is excited about the reception of the brand and product, especially among buyers, who often struggle to sell functional food products. "Buyers are being challenged to bring in more better-for-you stuff. In a challenging situation because those products just don't sell as well as mainstream favourites," she says. "But better-for-you is becoming the mandate of the future for most stores. We're finding that offering them up in this fun, flavourful way is resonating with both consumers and buyers."

The brand is eyeing wide-ranging mainstream distribution—from grocery stores to less traditional channels, such as movie theatres and hotels. "In the back half of this year, we are going to be make a big push for grocery distribution, where moms are shopping for their kids' snacks," Stoll says. "But we're also hoping to reach venues in the travel and hospitality channels—and anywhere else people are looking for delicious snacks."

Indeed, as healthier eating evolves past trend into lifestyle—with healthy mandates filtering down to schools, Snap Infusion is excited to be ahead of the snack products curve from a manufacturing standpoint. "People are demanding that snacks deliver on better for you that deliver on flavour that have all these elements to them," Stoll says. "It happened in a lot of other categories. It is the way world is going. Some people who were not accepting it initially are surprised and having to hurry up and make changes. We're excited about that. Hope people would be more aware of what they're are putting in their bodies."
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Taste beyond the tongue: How do other senses influence flavour?
03-Apr-2015 Food Navigator

Taste is much more complex than the experience of basic flavours on the tongue – it also encompasses our other senses to a larger degree than most people realise, according to Professor Charles Spence.

Spence is head of the Crossmodal Research Laboratory at Oxford University where he has worked with some of the world's largest food companies to develop products that effectively stimulate consumers' senses. At the recent Food Vision event in Cannes he spoke about 'superadditivity' – when different senses combine to enhance the taste of a food or drink – and 'subadditivity', when different sensory experiences clash, leading to a less enjoyable experience.

Sub-additivity for food manufacturers might mean that the colour of their product or packaging suggests a certain flavour for consumers, but the actual flavour doesn't match, leading to an unpleasant experience. Superadditivity might mean changing the texture of the packaging or product, or ensuring the colour of the product matches expectations, thereby enhancing the flavour.

"Are those expectations the same for somebody in Nice or Cannes as they are in the UK, or as they are in New Zealand or Australia, or in fact do those colours mean very different things in terms of the flavours we expect?" he asked. "Sometimes we find commonalities. Sometimes we find differences. No matter how it turns out I think it's going to be of interest for the food manufacturer to say 'how can we capture the attention in the first instance?', and then 'how can we make sure those expectations about flavour are carried through to the actual experience?'"

Spence, along with Professor Barry Smith, founding director of the Centre for the Study of the Senses at the University of London, asked attendees to taste wines with – and without – other sensory cues, including in a black glass to prevent visual assessment of the wine, with different music playing in the background, and while feeling various textured cloths.

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Delayed reactions and industry in-jokes: The psychology of functional foods

23-Apr-2015 Nutra Ingredients

According to Euromonitor International, fortified or functional food and drink sales jumped by 25% between 2008 and 2013 to reach $267.6bn (€249bn). But what does this industry term really mean to consumers anyway and what are the motivators behind such purchases?

Combined sports and energy drink sales were expected to grow by nearly 30% reaching $64.1bn in 2019 – representing a substantial chunk of that functional food pie. Perhaps it is no coincidence then that the 'function' in question for these drinks could be felt immediately. Drink this caffeinated product and you will feel more awake – a simple message to send and receive.

Meanwhile, try marketing food and supplements for things like cognitive health and the science gets harder to sell. Consume this product and in 15 years' time you may be better off for it – but then who knows, maybe it's just because you do the crossword. So when it comes to functional food, do their 'functions' have to be immediate?

Professor Monique Raats, director of the University of Surrey's food, consumer behaviour and health research centre, told us: "There are both long and short term claims made about products. It's about the nature of the benefits people are seeking and there are quite some substances where probably the nature of the benefit people are thinking to gain from it are the short-term ones."

Now or never

Speaking with NutraIngredient last year, Euromonitor analyst Diana Cowland said vision and cognitive health were key public health concerns with ageing populations and a rise in dementia and Alzheimer's. "But the problem with these health trends is it's very difficult to see the perceived benefits. The consumer really struggles with that tangible efficacy that is so important for a functional food or drink product."

Cardiovascular benefits like a reduction in cholesterol might be achieved in a month, a timeline still in the short term for most. She said this attraction had been reflected in sales. Products pushing cardiovascular health saw global says of $7bn (€6.5bn) in 2013, while brain health saw just half a million (€0.46m). Professor Raats said this could also come down to which claims were allowed under EU food regulation, suggesting perhaps short term health benefits were easier to prove than long term. She said greater research was also needed on what consumers understood by both these short- and long- term health claims.

Is functional food definition defunct?

Professor Raats said the term functional food did not necessarily carry weight with all consumers. "Functional food is almost a technical term that we in the food community have coined and not one that most people would even consider as a term." Asked if consumers might argue all food had a function, she agreed that this was an odd term and questioned whether this might have sprung from certain health benefits being pushed according to the claims available in order to secure sales.

Questions could also be raised about what such messages – pushing specific nutrients of functional food and not highlighting the innate benefits of whole foods – meant for public health and our food culture. “In many cases you could question how helpful [some of these statements are] to me as a consumer? And what am I to make of them and is this the way I should be thinking about my food?”

In her research on the perception of disease risk reduction claims, one aspect she examined was the impact of health claims on public health. There had been little research conducted on what it might mean if consumers were pushed by health claims towards diets richer in X, Y and Z.

Eating functions not foods

On “eating in functional terms”, she asked: “Is everything in all your choices always something you would articulate as: ‘Oh I’m doing this because I want to stay alert’?” This differed across populations though, with some thinking about foods in these health terms. This was documented by certain foods like cholesterol-lowering shots only consumed for their health benefit. Meanwhile, Vhari Russell, analyst for Food Marketing Expert, told us she saw a shift towards “provenance and honesty” from brands.

“Maybe we need to look back to our core products [like milk] and promote the health benefits of what we have already and communicate those to the consumer.” Raats’ research suggested that people would ‘upgrade’ health claims based on generally assumed health knowledge. For example, a nutrition claim on calcium content might be upgraded in the mind of the consumer to mean this product could help fight bone conditions. This was less likely with ingredients relatively unknown to the consumer.

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Worldwatch: Sustainable production faces ‘hidden threats’

17-Apr-2015 Food Navigator

More sustainable production is needed to ensure food and nutrition for future generations, but sustainability faces hidden threats, claims the Worldwatch Institute.

In a new report, titled State of the World 2015: Confronting Hidden Threats to Sustainability, the research organization highlights eight factors that threaten sustainability but are not being widely discussed – all of which are linked to overconsumption of resources. Specifically, it cites growing dependence on imported food, agricultural losses, problems of energy availability, increasingly degraded oceans, the pursuit of never-ending economic growth, migration as a climate adaptation strategy, disputes over Arctic ownership, and emerging diseases originating in animals.

"These threats are hidden in the sense that they are commonly overlooked or underappreciated," said acting president of Worldwatch Ed Groark. "But addressing them is critical to building sustainable societies….These are significant threats, but each and every one of them has solutions, especially if we commit to an ethic of stewardship, robust citizenship, and a systems approach to addressing the challenges that we face.”

Reliance on food imports

The organisation said pressure to import food, for example, could be reduced by effectively increasing food supplies through reductions in food waste. According the UN’s Food and Agriculture Organisation, about a third of the global harvest is lost each year. According to the report, import-dependent countries are vulnerable to high prices and supply disruptions due to crop failures, as well as to politically motivated manipulation of prices in supplier countries. More than a third of the world’s countries depend on imported grain for at least a quarter of their domestic consumption, while a quarter import more than half their grain, the report said.

Questioning the economic growth model
"Even economic growth, long unquestioned and coveted, needs to be examined with healthy scepticism," Worldwatch said. It claims that the pursuit of never-ending growth comes at an environmental cost, as human activities outgrow the planet that supports them – and argues that the economy could still offer adequate employment, greater equality and lower environmental impact even if it were not driven by growth of material throughput. "This requires that economics ministers and others set human well-being, rather than growth, as the primary economic objective, shifting the global economic machine away from intensive resource use and the endless pursuit of 'more'," it said.

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$250M sprouted seed industry set to rise
Food Manufacture 19Mar2015

Another ancient food has been given a makeover and is set to tap into consumers' desire for 'good carbs' and healthier snacks, according to New Nutrition Business (NNB). Like many ancient grains, sprouted grains are naturally glutenfree and are good for consumers wanting to avoid "bad carbs", said Julian Mellentin, NNB director. "By taking grains and sprouting them before using them in snacks and other foods, they're delivering 'good carbs' that are naturally glutenfree for people who want to snack more healthily," he said.

$250M of sales
The sprouted grain market was growing fast in the US and Mellentin predicted sales would reach $250M by 2018. Way Better, a sprouted grain snack producer in the US, had already grown its business to sell products in more than 20,000 stores in the US and had generated sales of more than $25M in just three years, he added. A small, but mainstream, consumer-base was driving demand for sprouted seeds in a bid to reduce their consumption of carbohydrates and, in particular, foods made from wheat and corn, said Mellentin.

Food safety risk
However, in 2012, emerging evidence from food scientists said sprouted seeds could present an unacceptable food safety risk, unless effective control measures, such as irradiation, could be used to make them safer. Contamination of Fenugreek seeds with E.coli O104 killed more than 40 people in Germany and France in 2011 and left a further 3,700 ill. At the time, a meeting of the Advisory Committee on the Microbiological Safety of Food, which advises the UK's Food Standards Agency, declared sprouted seeds a risk.

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Growing a rainbow revolution
Food Manufacture 18Mar2015

For the first time since the meteoric rise of the natural colours market several years ago, supply and demand are in balance, writes Lynda Searby

Unless you've been hiding under a rock for the past decade, you'll know that natural colours have experienced a meteoric rise. The 2007 Southampton study was the catalyst for what was to become a long term shift away from synthetic colours and a move towards natural.

The tipping point came in 2011, when a joint study by Mintel and Leatherhead Food Research revealed that natural colours had overtaken artificial colours for the first time. Market research reported that the share of the total food colours market taken by natural varieties had increased from 34% in 2007 to nearly 39% in 2011. By contrast, synthetic colours' share had declined to 37% in 2011 from 40% in 2007.

Since 2011, the growth gap between natural and artificial has continued to widen. A report published at the end of January by Future Market Insights predicted natural food colour use will grow by 2.8 times more than synthetic colour use between now and 2020. Anecdotal evidence from those in the industry suggests that artificial colours have been virtually wiped out from food and drinks in Europe, bar those applications where technical barriers preclude their replacement.

"To our knowledge, artificial colours are no longer used in the widespread manufacture of beverages, but are still common in confectionery and bakery, where it's difficult to find a replacement in the range of natural colours," says Campbell Cooper, general manager of KleurCraft.

Carsten Bennike, executive vice president of Chr Hansen's natural colours division, estimates that the European food and drink industry has reached a level of 70% conversion to natural. "Not everything has converted but a lot of processed foods and soft drinks have," he confirms. "There are niches, for example, alcoholic drinks and brilliant blue colours, where there is no legal requirement to declare artificial colours on the label." Chr Hansen's view is that the shift to natural colours has not yet reached saturation point. "We believe that the conversion will continue, albeit at a slower rate," says Bennike.

According to the Future Market Insights report, in western Europe, the trend is more towards consuming colouring foodstuffs than natural colours. GNT Group, a Germany-based producer of colouring foods, reports that the market for colouring foods has grown significantly in recent years, on the back of consumer demand for safe and natural foods. "In Europe and the US, these fruit and vegetable concentrates are already being used extensively. According to our estimates, today a significant proportion of new product launches in Europe contain colouring foods," says Paul Collins, managing director of GNT UK.

Driver

But, the main driver for using colouring foodstuffs is the regulatory climate in the region. European Regulation (EC) No 1333/2008 on food additives defines natural colours as substances obtained by physical or chemical extraction, which add or restore colour in a food and include natural constituents of foods and natural sources. "Natural colours are therefore food additives with E numbers, which might create problems for manufacturers looking at clean-label formulations," explains Cooper.

Colouring foods, on the other hand, are classified as food ingredients, rather than food additives. "They do not undergo a selective extraction of pigments and retain the original ratio between nutrients and pigments, offering all the natural properties of food," says Cooper. As an example, he points out that red beet used in the manufacture of pink muffins would be considered a food ingredient, but if the pigment was extracted from the red beet and added to the muffin, it would be regarded as an additive, and therefore included in the ingredients list as an E number: E162 beetroot extract.

Supply challenges

Whether colouring food or natural colour, the downside of non-synthetic colorants, is their unpredictability. Supply cannot react immediately to surges in demand and sources are at the mercy of climatic conditions, which can affect consistency, quality and availability. Early on in the natural colours revolution, the use of some natural colours was beset with supply issues.

"What we saw during the first years of conversion was that some colours, such as carmine, grape skin extract and black carrot, were in high demand and supply wasn't able to follow suit," recalls Bennike. However, he says that in the past two years, supply has caught up with demand and that the industry has become better at forecasting demand.

Cooper agrees that supply and demand is now in balance in the colour segment, but points out that growing demand for natural colours and colouring foods has led to increased supply chain complexity. “Factors such as the selection of specific seeds, the availability and processing time of raw materials and stability of the colour, which determines the end product’s shelflife, all play an even more important role in the supply/demand relationship,” he says.

Out of necessity, colour suppliers have become savvier in their management of the supply chain, with some taking nature into their own hands. GNT, for example, operates a vertically integrated business, whereby it controls the entire supply chain, from the selection of seeds all the way through to the finished products.

“Any pricing volatility is related to the crop itself, whether this is driven by climatic conditions, yield or harvest. The answer is to control the supply chain by being vertically integrated. We are able to offer our customers long term stable pricing and year round availability of every product, regardless of season and crop yield,” says Collins.

Wild says it is essential to have stringent raw material sourcing in place to ensure crop variations and shortages are balanced, and says a network of supplier and long term trading agreements are helpful for minimising pricing fluctuations.

Chr Hansen’s strategy has been to develop a global sourcing organisation, with people on the ground close to the markets, and to cancel out seasonality problems by working in both the northern and southern hemispheres. “Having said that, there are still fluctuations,” says Bennike. “Dealing with natural products is not plain sailing. There are floods and droughts and prices will go up and down.”

Breeding and selection
The Danish firm has also embarked on a breeding selection programme to develop varieties with higher yield and colour content. The premise of the programme is that lower volumes of raw material will be needed to produce the same colour intensity, delivering continuous savings. “If we can increase yield and colour, this will reduce the need for kilo quantities,” explains Bennike.

The programme has yielded black grape, annatto, black carrot and orange carrot concentrates with better colour pigments than in the past. “It’s not applicable to all raw materials, but this approach does work for several sources including red beet and carrots,” says Bennike.

Alongside this, Chr Hansen is leveraging its enzymes and cultures expertise to develop new technologies for producing natural colours. For example, it has successfully produced carmine from a fermentation process in laboratory conditions. “We’re getting proof of concept for the technology. It involves building the biosynthetic pathway for carmine in a microorganism to enable the production by fermentation,” says Bennike. This technology is still a long way off, so for the time being, the colours industry will have to put its faith in knowledge, supply chain management and nature.

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‘Dull’ health claims lead many to miss £27bn market
Food Manufacture 27Mar2015

Thousands of European food and drink firms are missing out on the £27bn global functional food market because of restrictive health claims wording, leading nutritionists have complained.

European Food Safety Authority (EFSA) guidance for the labelling of approved products with health claims was dull and difficult for firms to use on products, according to dietician Dr Carrie Ruxton. Dull wording also put

consumers off buying products and prevented them from gaining the benefits of functional food and drinks, Ruxton told a Food and Drink Innovation Network conference on Nutrition in London earlier this month.

This was especially troublesome as many European and UK consumers had poor diets and health, she added.
'Diets higher than ever in fat' "We've got diets higher than ever in fat, salt and sugar. Consumers are taking in too many calories and it's a worry," she said. There were many health-boosting products on supermarket shelves, but consumers weren't noticing them because the claims were dull or meant nothing to them, Ruxton added.

Another nutritionist, who asked not to be named, agreed with Ruxton and said: "EFSA-approved health claims make it hard for firms to create exciting wording on functional food products." Products that could make a claim about benefitting the immune system, for example, had to be labelled with something such as "'playing a role in the normal function of the immune system,' which is dry", he added.

What food manufacturers wanted to do was, without misleading consumers, make more exciting claims about their products to boost sales, the nutritionist claimed. EFSA approved wording was "uninspiring" and didn't engage consumers enough to make them pick up functional products, he added.

'We need to change the wording'
"We need to change the wording if consumers are to benefit from the claims. What does something like 'supports the normal function of the immune system' mean to a consumer anyway?" the nutritionist said. Nobody from EFSA was unavailable for comment at the time of publication, however, EFSA's Panel on Dietetic Products, Nutrition and Allergies (NDA) had been asked by EFSA to revise its guidance on the scientific requirements for health claims related to gut and immune function last year. The panel's findings are expected to be published later this year.

Although the revision will mostly focus on the process of health claims authorisation, some in the industry hope health claims wording will also be revised at the same time. Meanwhile, a legal expert in health claims told FoodManufacture.co.uk last year that the Advertising Standards Agency's policing of EU health claims offered a "ray of light" for food firms looking to use them in advertising. Firms would be more successful in making claims about a product's 'health benefits' by using imagery instead of words in advertisements, Eversheds senior partner Owen Warnock claimed.

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Food preferences among elderly peers may differ, says study
Food Navigator 08Apr2015

Older adults with a poor appetite may have a higher preference for variation in foods compared with older adults with a good appetite, according to a study.

The findings published in Appetite suggested that a poor appetite in older adults could be an important factor of reduced food intake and undernutrition. The findings could therefore lead to effective strategies to reduce such risks among the 'vulnerable group', it said.

The researchers added that among other findings, the preference for nondairy foods products and a variation for high protein foods were more pronounced for older adults in a poor appetite group than older adults with a good appetite. "They also preferred non-dairy high fibre foods and solid texture...[and] some combinations over others such as high protein [diets] with variation and high fibre with sauce," said Dr Barbara Meij, the lead author of the study.

Increasing the variety of food offered to such individuals could therefore be an effective strategy to stimulate food intake. “The provision of adapted meals and snacks with high variation and colour variation could help,” added Meij.

Structure of foods

With regard to the structure of foods, the authors said that they had expected older adults to prefer a liquid texture as they required less chewing and were easier to swallow. But results suggested that the participants preferred a solid texture, particularly for foods with high carbohydrate content.

A possible explanation for this could be because subjects who had difficulties chewing or swallowing had been excluded from the study. “Chewing and swallowing difficulties are generally highly prevalent in older institutionalised persons, so this is probably a limitation of the generalisability of our findings to this specific population,” said the team.

High protein diets

Previous experiments in healthy adults showed that after an imposed protein deficit, food intake appeared to change toward high protein foods in order to compensate for the protein shortage. In this study of older adults with a poor appetite, 44% were considered undernourished and therefore probably had a protein deficit. “The observed preference for foods with variation and high protein content in older adults with a poor appetite supports these findings,” added Meij.

The preference for non-dairy foods products was consistent for older adults with a poor and a good appetite but was slightly more pronounced in the poor appetite group. And since dairy foods are an important source of protein, calcium and B vitamins, the finding that the participants did not like them was a cause for concern.

The necessary protein and calcium could therefore be consumed through other food, said the team. Offering a large variety of high protein foods or replacing meat with easier to chew highquality protein sources like eggs, seafood, and poultry could be an alternative. “As we did not observe a preference for animal protein, vegetarian protein sources such as legumes or soy products are also an option. Interestingly, studies have shown that increasing variety by offering more types of foods is an effective strategy to increase short term food intake in older adults in general and in older adults at risk of undernutrition,” said the researchers.

The study

The team studied 349 older adults of 65 to 101 years in nursing, residential care homes, hospitals or at home receiving home care. The study used a computer-based assessment with a variety of food images to determine the food preferences. Future studies should be conducted to confirm the identified food preferences in older adults with a poor appetite using actual food intake data, the researchers concluded.

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Food Safety & Regulatory News

Labels on front of food packaging can enable healthier choices, new research finds

April 21, 2015 Science Daily

In a new study published in the British Journal of Nutrition, a team of researchers led by the University of Surrey has found that front of package nutrition labels can enable consumers to make healthier food choices.

In recent years, a number of different front of package labels have been developed by industry and health promotion organisations. The majority of labels include values for energy, sugar, fat, saturated fat and salt, but some also include percentage Guideline Daily Amounts or traffic light colours to help consumers' understanding of the numerical values. In some cases a logo is included on the label to indicate that the food is a healthier choice.

The team analysed data from 2,068 adult consumers in four European countries (the United Kingdom, Germany, Poland and Turkey) who were presented with three categories of food -- pizza, yoghurt and biscuits. The study looked at the effect of overlaying a basic front of package label displaying only values for energy and the four key risk nutrients sugar, fat, saturated fat and salt, with four other systems; Guideline Daily Amounts, traffic light colours, a hybrid version of Guideline Daily Amounts and traffic light colours and a health logo.

The results showed that in all three food categories, participants were able to differentiate between the healthiest, middle and least healthy varieties, with all the label systems and only small differences were observed between them. Researchers believe the addition of traffic light colours, Guideline Daily Amounts or health logos to basic nutrient information may have a greater impact in real-world settings and that further research is needed to establish their potential to change shopping behaviour.

"Front of package food labelling is an important tool in helping consumers to make healthier choices and to encourage the industry to provide healthier foods," said Professor Monique Raats from the University of Surrey who led the research.

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Can cultural differences affect consumer understanding of food labels?
02-Apr-2015 Nutra Ingredients

Country-specific differences could influence consumers' understanding of nutritional information on food products, researchers have said.

Authors of a European Union funded project conducted a ten-country online survey to understand how motivated and able European food shoppers were in processing nutritional information on food products, and whether the differences were country-specific or segment-specific. They said they will now look for any "(in)consistencies between consumer needs and what is in the market". The results are expected in mid-2015.

The research
The objective of Role of health-related CLaims and sYMBOLs in consumer behaviour (CLYMBOL) is to determine how health-related information on food products affects consumer understanding, purchase and consumption

behaviours. “To [our] knowledge, this is the most comprehensive study in this field to date, both in terms of the number of countries covered and the scope of research,” said Dr Sophie Hieke, lead author of the study.

The four year project to 2016 is using a wide range of research methods including product sampling, cross-country surveys, eye-tracking (what consumers look at and for how long), laboratory and in-store experiments and interviews. Taking insights obtained from an earlier EU-funded project FLABEL (food labelling to advance better education for life) as a point of departure, the study said its aim is to ultimately provide “a solid information basis for future research and public policy.” The project has been divided in to different Work Packages.

Current status of CLYMBOL
The objective of Work Package 1 (WP1) was to look into the history of health-related claim and symbol use across EU member states, their current prevalence on food packaging and in which contexts the claims and symbols appeared. A total of 2034 products were sampled in the Netherlands, Germany, Slovenia, Spain and the United Kingdom, it said. Dr Igor Pravst, leader of the first work area said they are currently working on analysing the nutritional composition of the foods that were sampled. “In the last stage, we will compare the criteria for assigning health symbols,” he said. The results are expected this summer.

Current status of health claims and symbols
Work Package 2 will examine differences in consumer motivation and ability to process health-related claims and symbols, said the researchers. Data analysis and reporting for this work area will be finalised by mid-2015, the report added.

Methodological toolbox
The aim of Work Package 3 is to develop a toolbox to measure how health claims and health symbols, in their context, are understood by consumers, and how they affect consumer food purchasing and consumption. For this, researchers will apply a range of scientific research approaches, including in-store and experimental studies in selected supermarkets.

The study added that the toolbox will cover a range of tested and validated methods, explaining how to apply each technique and how to undertake the analysis and interpretation. This research will be completed by early 2016, said the authors.

Public policy implications
Work Package 5 will look at the implications of the findings from work packages one to four, said the study. Analyses will also explore the role of social media “in communicating with the public and assisting consumers in making informed and healthy food choices”. This will be done for different stakeholders (consumers, industry, retailers, non-governmental organisations, policy makers and others).

Communication and stakeholder engagement
The project will also have a separate work area that will focus on the dissemination and communication of CLYMBOL. “Once the data from WPs 1 to 5 become available, a holistic analysis of the role of health claims and symbols in consumer behaviour will be possible, ultimately providing a solid information basis for future research and public policy,” it said.

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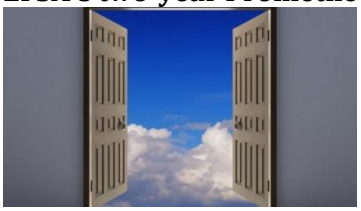
EFSA’s pledge: ‘More robust, open & transparent processes’
31-Mar-2015 Nutra Ingredients

Greater transparency, more robust scientific assessments and wider participation are at the heart of EFSA's two-year Prometheus project.



The Prometheus project (Promoting MetTHods for Evidence Use in Scientific assessments) will publish two upcoming scientific reports. The first to be published in May 2015 will look at the principles and processes for dealing with data during evaluations while the second will be published in October 2016 and will analyse evaluation methodologies.

Last year EFSA published a paper called Transformation to an 'Open EFSA' which looked at ways to increase transparency amidst allegations of secrecy. In an editorial published on its website, the authority said that maintaining full transparency during scientific evaluations - showing what has been done and how – as well as interaction with the wider scientific community were essential.

It also acknowledged the need to provide answers in a practical working context so that its evaluation can be of use to those who need it: "In other words, a comprehensive response that is given too late may be of no use to decision makers or risk managers," the paper said. However, it said that decision- and policy-makers must understand the limitations of scientific evaluations; they are done with 'a degree of … uncertainty' based on the strength of data available at the time.

Secrecy and conflicting interests

EFSA has been criticised in the past for a lack of transparency surrounding its evaluations as well as conflicts of interest among committee members. The authority responded to allegations of secrecy upon publication of 'Open EFSA' saying: "There are no secret studies. Under EU law, interested parties with a legitimate request can have full access to the documents of the European institutions – Public Access to Documentation. EFSA always responds to such requests."

NGO Corporate Europe Observatory (CEO) said that public trust in EFSA had been undermined by a 'real and perceived lack of independence from commercial interests'. "EFSA's transparency and independence policies must be strengthened together, but even after so many years of being criticised the agency has failed to stop conflicts of interest among the members of its expert panels," it added.

In September 2014 EFSA invited national partners, other scientific advisory bodies and civil society organisations to give feedback on its "vision for greater openness and transparency in its scientific processes". Feedback has been incorporated into the project.

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Food safety victim to absence of coordination: WHO

Food Navigator 07Apr2015

Food safety can be the victim of an absence of good coordination, according to the World Health Organization's (WHO)'s Director of Food Safety.

Dr Kazuaki Miyagishima told FoodQualityNews that there was a lack of data around the burden of foodborne disease, ahead of World Health Day today (April 7). "This lack of data has made many governments hesitate in investing to prevent foodborne diseases. If we can quantify, we can use the data and determine criteria of foodborne disease and criteria to tackle it as we have vague statistics but the data is not convincing enough," he said.

“One challenge is there is an ignorance in food safety, it is dealt with in some countries by not one ministry but several ministries or departments dealing with food. “In Eastern Europe and Central Asia sometimes they have five to 10 ministries who deal with food, someone for the primary production of plants, another covers the food industry but not production and inspectors or sanitary controllers without the necessary good level of communication.”

WHO said the day is an opportunity to recognize the important food safety role of all those involved in food production, and to strengthen collaboration and coordination, to prevent, detect and respond to foodborne diseases efficiently and cost-effectively.

Developed and developing nations
Dr Miyagishima said WHO can assist member states in two ways from its international level. “We can develop international standards for food safety that apply to developed and developing countries” he said. “Also we can provide technical assistance to countries in need, usually developed countries have their own capacity, it is the developing countries which need more help. Food legislation is diverse, it can be different from one country to another and some countries have independent agencies to develop food safety.

“WHO is not the only player, there is the FAO (Food and Agricultural Organization) which helps countries build capacity. National schemes may differ from country to country but WHO and FAO make sure whoever they ask from us, the advice they get is the same.”

WHO established the Foodborne Diseases Burden Epidemiology Reference Group (FERG) in 2006 as the burden of foodborne disease had been largely ignored or unquantified, said Miyagishima. The final report of the group will be published in October this year. “For example, if you have Cancer you go and see the doctor and you are diagnosed. In France or Switzerland you can count on the statistics of Cancer in that year,” he said. “With food poisoning you stay in bed with diarrhoea for two days and treat yourself, not all cases see the doctor so there is a high level of under reporting. There are a lot of people in food: the producers, transportation, processors, catering down to the consumers at home and each person has a role.

“WHO makes sure national governments take food safety responsibility seriously and put in place sound food safety systems at national level so consumer health is protected and invest in the infrastructure to make the system work.”

Scientific approach
Dr Miyagishima said WHO wants people to take a more scientific approach to food safety. “Food is cultural and has emotional dimensions, we believe in what we want to believe and adopt behaviour in what is safe and what is not safe,” he said. “With the slogan [From farm to plate: make food safe] we wanted people to ask the question about the way they eat and purchase the food they do.”

Making food safer also provided an opportunity to food producing countries, said Dr Miyagishima. “Consumer needs are always changing so the food production and distribution system needs to adapt and upgrade food safety measures to the changing scenery,” he said. “The globalisation of food products is an opportunity to food producing countries to make food products safe and that will open up international market and the ability to sell to remote countries. Developing countries exporting means a sustainable way of economic development.”
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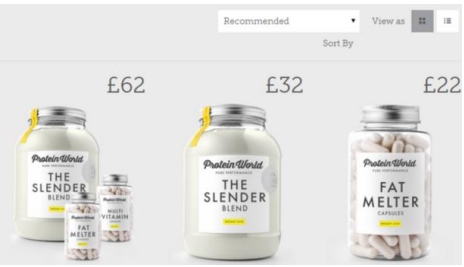
UK blows whistle on sports supplement claims
Nutra Ingredients 08Apr2015



The UK advertising watchdog has muzzled meal replacement, muscle building, metabolism, L carnitine, CLA (conjugated linoleic acid) and other claims being made by a UK based online manufacturer retailer as it continues its claims crack down based on EU law. The Advertising Standards Authority (ASA) told Protein World Ltd to amend the above claims and others like slimming and cosmeceutical claims – much of which the Surrey registered business had complied with, although some remained seemingly in breach of the ruling today.

Unusually, while many ASA rulings are based on competitor or consumer complaints, this 9point action was brought by a Northampton Trading Standards body – indicative of increased UK enforcement activity of the EU nutrition and health claims regulation (NHCR).

Northampton Trading Standards challenged multifaceted marketing on www.proteinworld.com on nine accounts and all were upheld by the ASA. Protein World was not available for comment at the time of publication. One of the counts found the product name 'Slender Blend' was an unauthorised health claim, an interpretation of the law questioned by The Whitehouse Consultancy chair Chris Whitehouse. He said "product names which were on the market prior to 1st January 2005 may continue to be used until 19 January 2022. That point isn't mentioned in the ruling."

The ASA's Matt Wilson told us Protein World hadn't provided information about the brand name existing before 2005 and so it assumed "that the names are not pre2005. If the product/brand name was trademarked, or they can prove it was in common use, before 2005, they don't have to include an authorised health claim until 2022."

Return to Slender
Slender Blend was marketed as a meal replacement shake and made metabolism based slimming and beauty claims and contained green tea extract, raspberry ketones and vitamins. Protein World said it modified the claims and altered the formulation to replace raspberry ketones (most forms of which do not possess EU novel foods approval) with the natural stimulant, guarana. The ASA accepted this but said its meal replacement claims were unjustified because the product was not shown to comply with what a meal replacement should be. It was not therefore authorised to use the approved EU claim that "Substituting two daily meals of an energy restricted diet with meal replacements contributes to weight loss".

The agency backed claim wording flexibility under the NHCR, but said a protein-based claim around lean and toned muscle was unauthorised as it exaggerated the NHCR-approved claim: 'Protein contributes to a growth in muscle mass'. "Moreover, we considered consumers would understand the claim to relate to the effects of the product as a whole, rather than the protein contained in the product. We had also not seen how the product contained sufficient protein to meet the conditions of use associated with the claim." Beauty claims for the same product were deemed unauthorised.

Other claims
Claims for 'Fat Melter capsules', 'Slender Blend', 'CLA powder', 'Aceytl LCarnitine', 'Chlorella' and 'Lean Muscle' were all curtailed by the ASA with Protein World acting on some if not all of its ruling already. Of the ASA's ongoing crackdown, Whitehouse warned, "Industry should be in no doubt that the enforcement authorities will be increasingly aggressively policing this all encompassing legislation across the EU. All food companies would be well advised to ensure that their marketing materials are compliant."

Weight loss, weight control
After publication UK based food law expert Owen Warnock, a partner at Eversheds, noted companies needed to be mindful of the fact that the NHCR applies to both weight loss and weight control claims. "On that basis it's not really a stretch in my view to say that 'Slender Blend' is an implied health claim. As it happens however, there was lots else claimed for the product which asserted very clearly weight loss properties."

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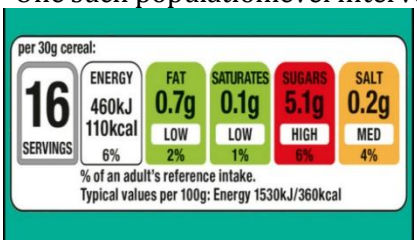
Food labels: Using emoticons better than using colour?
Food Navigator 09Apr2015

Emoticons on nutritional labels could have stronger impacts on perceptions of snacks than colour coded labels, a study has claimed.

Frowning emoticons in particular could be more potent than smiling emoticons at signalling the healthiness and tastiness of cereal bars, said the study published in Appetite. The combined effects of using emoticons and colours on labels were tested among 955 representative samples of people in the UK. “Overall nutritional labels had limited effects on perceptions and no effects on choice of snack foods,” said Dr Milica Vasiljevic who led the study.

At a time when obesity has become a worldwide problem, there was a need for innovative population-level interventions to change the obesogenic environments that have contributed to the obesity epidemic, said the team. "One such populationlevel intervention is nutritional labelling on food products."



However, the researchers added that the effectiveness of colour coded nutritional labels required further scrutiny.

Emoticons and children

As such, frowning emoticons may be more effective at signalling threat and danger arising from unhealthy food, since even very young infants can understand the nonverbal significance of frowning and smiling emoticons. The danger contained in the colour red, as used in traffic lights, may need to be learnt while growing up.

“Emoticon labels on unhealthy foods may be more potent for children, who have been found to understand and act upon communicated emotions as early as infancy. “This has important implications for devising policies to tackle the current childhood obesity epidemic,” said Vasiljevic.

Traffic light labels

Recent studies have reported that using green labels to denote healthier foods, and red to denote less healthy foods, increases consumption of green and decreases consumption of redlabelled foods. But the results highlighted the need for further examination of the impact of colour labelling, especially in light of the growing popularity of traffic light labels. “Policy decisions regarding traffic light and other similar colour labels should wait until the effects of such labels are systematically examined and the magnitude and direction of these effects are quantified,” said the team.

Using emoticon expressions could be used with current nutritional labelling policies for added benefits, as the emotions linked to smiling and frowning tend to be universal, they said.

The study

The team used three emoticons (smiling, frowning and no emoticon), three colour labels (green, red and white) and two food options (chocolate bar and cereal bar). Participants were asked to rate the level of desirability, healthiness, tastiness, and calorific content of a snack bar they viewed.

Regardless of label, participants rated the chocolate as tastier and more desirable when compared to the cereal bar, and the cereal bar as healthier than the chocolate bar, said the team. Results showed that a frowning emoticon on a white background decreased perceptions of healthiness and tastiness of the cereal bar, but not the chocolate bar.

FoodNavigator contacted the researchers prior to publication to ask how realistic it was that companies would use such emoticons onpack. However, they were not immediately available to comment. Last year, France's health minister had put forward plans for the country's own 'traffic light' nutrition labelling system; while the European Commission started investigations whether the UK's existing 'traffic light' front-of-pack labelling was compatible with EU law. If it was found lacking, an infringement procedure, referral to the European Court of Justice (ECJ) and possible fines could follow, it had said.

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Coconuts causing confusion

Food Manufacture 19Mar2015

Consumers are being "misled" by gimmicky and inaccurate coconut oil marketing, claims the Coconoil brand founder Garry Stiven.

A recent rise in coconut oil popularity has led to the launch of numerous new brands, which were using confusing and misleading terminology, said Stiven. Many products were being labelled with the terms "extra" and "virgin" with no foundation for use, he said. "'Extra' in coconut oil terms doesn't mean anything and there is no foundation for its use."

Regulated

When used to label olive oil, the word "extra" denotes that a product had been made to a certain standard and by using a specific manufacturing process, he added. However, the term was regulated and only applied to products that had met a certain standard. "No such standard exists for coconut oil and brands are using it as a marketing gimmick," claimed Stiven.

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One protein quality method needed in law, says dairy

17-Apr-2015 Nutra Ingredients

A study comparing two methods of measuring protein quality has highlighted the need for one to be chosen and made EU law, says dairy player Volac.

The research, conducted by Massey University in New Zealand and the R&D department of dairy firm Fonterra, compared two methods of measuring protein quality: the traditional protein digestibility–corrected amino acid score (PDCAAS) and the FAO-recommended 'newbie' called the digestible indispensable amino acid score (DIAAS). The researchers used both methods to measure 14 different dietary protein sources - whey- and soy-protein isolates, milk-, whey-, rice- and pea- protein concentrates, cooked kidney beans, roasted peanuts, cooked peas, corn-based breakfast cereal, cooked rice, cooked rolled oats and wheat bran - consumed as part of a wheat starch-based diet by growing male rats.

The methods produced different results for 11 out of the 14 protein sources. Products by Fonterra, Axiom Foods, Solae and Roquette were included in the study. The paper showed PDCAAS generally 'overestimated' the scores of sources of lower quality protein, while higher sources came out with lower scores compared to DIAAS. For example, DIAAS values for milk protein concentrate and whey protein isolate were 15% and 8% higher,

respectively, than that found using PDCAAS. Meanwhile PDCAAS overvalued corn-based breakfast cereals by about 574% compared to the DIAAS score.

"Untruncated PDCAAS values were generally higher than a DIAAS values, especially for the poorer quality proteins; therefore, the reported differences in the scores are of potential practical importance for populations in which dietary protein intake may be marginal," the researchers wrote in the Journal of Nutrition. Commenting on the paper, Suzane Leser, head of nutrition at Volac Human Nutrition, told us the results reiterated the importance of the DIAAS method being made law.

She said currently firms could cherry pick which method made their protein source look better. "We would like protein quality to be regulated so that it becomes obligatory for the industry to use the same method. And having protein quality recognised in legislation is an important step for every party in the protein industry, because it gives us the ability to differentiate the value of foods by evolving the messages on to protein quality, which today is impaired by the way legislation has developed in Europe to treat all proteins as equal."

The back story

The Food and Agriculture Organisation (FAO) has called the DIAAS method "preferable" to PDCAAS and called for more research to be conducted. Past research has shown the greater quality of dairy proteins using DIAAS. Dairy players like Volac have backed DIAAS and called for it to replace PDCAAS, which was established 20 years ago. Leser called PDCAAS "obsolete". Other non-dairy sectors remained sceptical. Roquette said it still used PDCAAS. Dr Catherine Lefranc-Millot, corporate scientific communications manager for the firm, told us: "[W]ith such methodology and analytical possible changes that could apply, it takes time."

Therefore she said the firm would be sticking with the long-standing PDCAAS method for now. Leser said: "For the food industry, the ultimate aim is to adopt protein quality in food legislation, which can only be achieved with an accurate method. The concrete outcome is for protein nutrition claims to include a measure of protein quality, so that the use of claims becomes restricted to truly valuable, high quality proteins. "This resolves many of the issues we have today around the definition of protein, such as preventing non-protein sources of nitrogen from making protein claims, as seen in the most recent cases of ‘protein spiking’."

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