



PFNDAI

# PFNDAI Bulletin

AUG 2017

FOOD, NUTRITION & SAFETY MAGAZINE

## PSYCHOLOGY OF FOOD CHOICES, FOOD PURCHASE AND EATING BEHAVIOUR



### Also Inside

#### **Nutrition & Health Claims:**

A Bridge between Science  
and Consumers

#### **Regulatory Round Up**

PROTEIN FOODS AND  
NUTRITION DEVELOPMENT  
ASSOCIATION OF INDIA

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# EDITORIAL

**Food fortification is not new in India but the extent to which foods are fortified is very low and insignificant.**

Vitamin fortification of vanaspati was required by law. Bread was fortified by lysine for some time. Iodised salt came sometime ago and has stayed despite some protests. Now FSSAI has allowed fortification of milk by vitamin A and D. There are also plans to bring out fortification of wheat flour.

Vanaspati or hydrogenated vegetable oil was made to be fortified as it was thought that this was primarily consumed by those who could not afford dairy products. Since dairy products would supply some amounts of vitamins which those consuming vanaspati would be missing out, so government made it mandatory for the vanaspati manufacturers to add vitamin A.

A few years ago government made salt without iodisation illegal. There were protests but it was continued and now most salt used in India is iodised.

A few months ago FSSAI allowed milk to be fortified with vitamin A and D. It has been shown by studies that Indians are deficient in both A and D. Some felt that vitamin D need not be used for fortification as India has plenty of sunshine and people may get it through exposure to sunlight as was always believed. However, there are several factors which affect getting vitamin D through sunlight.

Our dark skins reduced vitamin D production by sunlight in our body. The skin pigments do not allow UV light to go through skin and produce the vitamin. The pigments also protect us from deleterious effects of UV light such as skin cancer.

Second factor is nowadays many people especially women apply sunscreen products. People who try to enjoy sun on beaches may apply sunscreens to protect themselves from harmful effects of UV rays. However, most women and many men are nowadays worried about fairness of their skin. As UV rays not only produce vitamin D but also produce dark skin pigments to protect from harm due to overexposure to sun and UV rays. When sunscreens are applied, they certainly protect skin from harmful effects of sun and pigmentation but also cut down drastically vitamin D production.

Third factor is due to our lifestyle of staying indoors and using vehicles to travel so our chances of exposure to sun have been significantly reduced. Earlier children and even older people used to spend a lot of time outdoors and on sports grounds. But now even the sports are increasingly coming indoors. People including children spend too much time indoors either studying or playing computer games or watching TV. Spending time in malls is becoming more common than playing sports in open.

All these and other factors make it sensible to fortify our foods with vitamin D and others. FSSAI has plans for allowing fortification atta and other wheat products. A very commonly consumed food is the best vehicle for fortification so it can cover much larger population. We hope that such programs are continued and become successful.

**Prof. Jagadish S. Pai,**  
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# PSYCHOLOGY OF FOOD CHOICES, FOOD PURCHASE AND EATING BEHAVIOUR

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Childhood obesity is a known precursor of obesity and other non-communicable diseases in adulthood.

Children of obese parents are at a higher risk of developing obesity. Genetic and environmental factors are important in the etiology of obesity. Parents provide both genes and environment to children. This article highlights internal and external factors influencing children's food choices. The process of making food choices is a multifactorial and complex phenomenon. Potential factors which influence the eating behaviour are taste, nutrition, cost, convenience and peer influence.

People consider sensory perception of food as a dominant factor of their eating choice. If food is negatively perceived for its sensory attributes, its unlikely to be eaten. Various studies reported that taste is the most important influence on their food choices, followed by cost.

#### Food Stimuli

Food stimulus is any factor that elicits a response in an individual. There are various determinants which inter relate in the process of making food choices. Food-internal stimuli deal with flavour perception and food external stimuli deal with the acquired perception of food.

There are some comprehensive models which discuss interrelationship between Food-internal stimuli, Food-external stimuli and its several dependant variables.

#### Food Internal stimuli

Food internal Stimuli involves several sensory food aspects (taste, smell, appearance, texture etc.) and its interaction within and between sensory modalities. Evidence suggests that flavours of the amniotic fluid and human milk may affect the future food preferences. Infant's first flavour perception is of milk. This sensory experience with flavour has an effect on intake of milk and preferences of food in



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later childhood. Flavour perception of a breastfed infant is found to be different from that of the commercial formula fed infant. It is believed that formula fed infants have a single flavour experience and breastfed infants get exposed to variety of flavours from maternal diet, which are transmitted to the breast milk. Thus, breastfed infants facilitate greater response in terms of accepting novel foods than formula fed infants. There is an innate flavour preferences for sweet taste and reflexive aversions to bitter and sour taste. This hedonic response to a salty taste is found to be unstable during different stages of childhood. Although taste and smell play a central role, other factors such as appearance of food, texture, pain sensation (spice factor), sound of chewing also play a role. For example, brightly coloured foods like tandoori chicken, paneer tikka, Chinese bhel attract people's sensory attributes more than curd rice, dal rice, roti - sabji. People usually prefer crunchy chocolates over plain chocolates due to addition of the crunchiness, which appeals to the sensory attributes.

#### Food external stimuli

Food external Stimuli is about the perception of the product's information regarding nutrition and its health aspects (low fat, high fibre etc). It has both positive and negative effect on liking. It depends upon people's attitude towards nutrition and their concern for health consequences. It can have a positive effect on liking foods which are healthy or a counterproductive effect on selecting healthy/novel

foods. There could be a preconceived notion that healthy foods do not appeal to the sensory attributes. Sometimes people over consume the products which are claimed to be healthy. For example, all oat products are assumed

to be healthy and customers overlook the processing aspect of the product (instant oat noodles). More is the exposure to food, higher is the possibility of being liked. Mere exposure to food either gives sufficient condition for an increase in the liking or an opportunity to like those flavours. For example, initially when toddlers are given any food, they dislike the taste and when the same food is given repeatedly, their liking towards that food gradually increases.

#### Social environment

Eating not only fulfils biological needs but also provide source of pleasure, comfort and conveys information related to personal, cultural characteristics. Interpersonal or social factors have direct (eating style, rate, quantity of food) and indirect influence each other's food choices. Children's observation of other's eating behaviour plays important role in their eating behaviour. Social environment serves as a model for the growing child. Direct social influence requires the mediation of another person (Family, peer). For example, mother coaxing the child to try novel foods. Whereas indirect social influences are broad including beliefs, culinary traditions, social occasions. For example, vegetarian people like to consume food with people who have similar beliefs. People follow culinary traditions by making specific foods/sweets on the festivals like Diwali, Christmas. It is the way of modulating process of making food choices.

#### Physical environment

Availability of the food is one of the global rules of purchasing food. Availability is not limited to physical and economic access to foods. In many parts of the world there is still fluctuation in food supply and seasonal effects are observed. In developed countries food deserts are found in residential areas, leading to limited access to well stocked food shops. If access to certain foods (calorie dense, high fat) becomes limited, people would shift their food choices to other. A global rule of eating behaviour is believed to be regulated by the phenomenon that, if it is not available, it will not be eaten. If it is available it is likely to be eaten and if there is no alternative, it will be eaten. For example, some products (instant noodles) are popular because of the company which manufactures that particular product. When supply of that product is limited or affected, people hesitate to prefer other companies who manufacture the same product.

A change in pattern of food consumption is observed due to time scarcity and perceived time barriers there is decrease in the frequency of cooked meals at home and increase in the availability of convenience (ready prepared/ packaged) foods. This selection of processed foods could increase the risk of lifestyle diseases.

#### Parental Influence

Parents play a key role in shaping children's eating behaviour by direct influencing their food choices, by making certain foods accessible and available to them, by regulating extent of media's influence on their food habits.



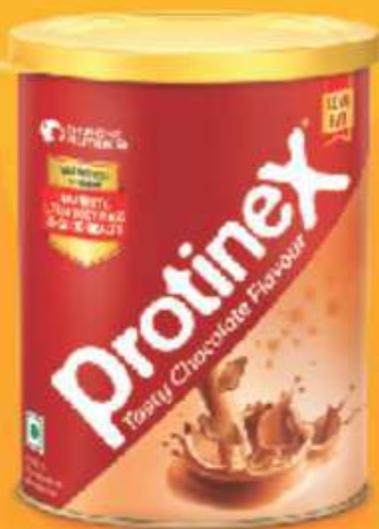
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A very early decision parents make is to choose whether formula feed or to breastfeed the child. It is also significant whether parents are controlling child's food intake or controlling child's behaviour using food as a tool. Some studies state that children select different foods when they are watched by parents as compared to when they are not around. Research also indicates that in the long run parental controlling methods, children may decrease their preference for the foods which were forced on them to be consumed. It can have a negative impact on quality of children's diet. In one of the studies, it was observed that parents who had higher level of control on their child's food choices reported that their children over-consumed both unhealthy and healthy foods. Parental influence indicates that children's eating behaviour is affected by the type of food eaten by their parents. Therefore, parents diet itself should be healthy, as it is the most important source of information for their children.

#### Association with rewards and punishments

It is parent's general belief that restricting children's access to certain foods would decrease their child's preference for those specific foods. On the contrary to these beliefs, it was found that restriction does not produce food dislikes, instead it can enhance the liking and increase the intake of those foods. Fisher and Birch found in a study that, maternal restriction of snack foods was correlated to girls' consumption of those same foods in an unrestricted environment. High degree of parental control is also associated with low self-control in

children. Parent's association of children's food choices with reward or punishment is unlikely to be changed in long run. Once the imposed restrictions are removed, children may go back to their food earlier food preferences.

#### Peer Influence

Social influence on eating pattern is powerful. It is observed that; type and quantity of food is different when it is consumed with group of people. For example, meals in the school, eating out with friends. People's dietary choices are likely to incline together with close social connections. A study was conducted on peer modelling and its effects on children's preference for vegetables. In which target group of children was placed at the lunch for 4 consecutive days next to children who preferred different vegetables for themselves (peas v/s carrots). It concluded that, children significantly shifted their preferences of vegetables.

#### Advertisements

Media is a pervasive purveyor of culture, which provides information about various food products. It can influence children's food preferences, food selection and their activity pattern. It was observed that during 12 hr period, 80 % of television commercials showed foods with low nutritional content including breakfast cereals, snacks, which were high in sugar, fat, salt. It is found that largest share of food product's advertisements was telecasted during children's programmes. In a study it was demonstrated that children's request for foods were correlated to the frequency with which children were exposed to those commercials. In

one of the experiments conducted, children consumed 45% more, when they were exposed to food adverts.

#### Conclusion

It is very important to inculcate healthy eating practice in children. Children's eating behaviour and dietary habits acquired during childhood persist through out adulthood. Although nutritional intervention strategies focus on transmitting information about basic nutrition and its positive consequences on health, they do not appear to be impactful and significant on dietary practices. It is observed that, these nutritional intervention programmes may be too much oriented to health aspects rather than focusing on taste, liking and flavour perception. These campaigns have had limited success in terms of changing eating habits. Therefore, newer strategies which focus not only on health but also on taste and appearance of the food should be preferred.

#### Selected Reading:

1. Lean L et al, Development of Eating Behaviors Among Children and Adolescents, American Academy of Pediatrics, Nov 1997
2. A. Eertmans F. Baeyens O. Van den Bergh, Food likes and their relative importance in human eating behavior: review and preliminary suggestions for health promotion, Health Education Research, Volume 16, Issue 4, 1 August 2001, Pages 443–456
3. Birch LL, Effects of peer models' food choices and eating behaviors on preschoolers' food preferences, Child Dev. 1980;51:489–496

# NUTRITION & HEALTH CLAIMS: A BRIDGE BETWEEN SCIENCE AND CONSUMERS



By **Dr. Jasvir Singh, Regulatory,  
Scientific & Government Affairs Leader - South Asia  
DuPont Nutrition & Health (Danisco India Pvt. Ltd.)**

As consumers are becoming more and more aware, they tend to make purchasing decisions based on the information available with them.

In India, consumers collect information about the foods from a wide variety of sources, such as family/traditional knowledge, education, the media and advertising, food product labels et cetera. As nutritional and health benefits are playing an increasingly important role in influencing purchase decisions, information provided on food product labels is becoming more important.

Besides the general product information and nutritional information, health benefits of a food are becoming important instruments in engaging with consumers. In the global regulatory terminologies, such information is defined as “claims”.

At a global level, Codex Alimentarius Commission of the Joint FAO/WHO Food Standards Programme, are known as the reference point for food regulations. Although the implementation of the Codex Alimentarius is voluntary,

the World Trade Organization has recognized it as a reference in international trade and trade disputes. The Codex Committee on Food Labelling develops guidelines on nutrition labelling and health claims.

CODEX STAN 1 – 1985 (General standard for labelling of prepackaged foods) defines “Claim” as “any representation which states, suggests or implies that a food has particular qualities relating to its origin, nutritional properties, nature, processing, composition or any other quality.” While this definition plays the role of an overarching guideline, CODEX has laid down another guideline to specifically deal with nutrition and health claims (CAC/GL 23-1997). This guideline has provided the following definitions:

“**Nutrition claim**” means any representation which states, suggests or implies that a food has particular nutritional properties including but not limited to the energy value and to the content of protein, fat and carbohydrates, as well as the content of vitamins and minerals. Nutrition claim can be further of three kinds:

- content claim - where emphasis is

only on the content of a nutrient,

- comparative claim - where nutrient content in one food is compared to that of another, and
- non-addition claim - where emphasis is on non-addition of an ingredient.

“**Health claim**” means any representation that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health. Health claims include the following:

- Nutrient function claims – a nutrition claim that describes the physiological role of the nutrient in growth, development and normal functions of the body.
- Other function claims – These claims concern specific beneficial effects of the consumption of foods or their constituents, in the context of the total diet on normal functions or biological activities of the body. Such claims relate to a positive contribution to health or to the improvement of a function or to modifying or preserving health.
- Reduction of disease risk claims – Claims relating the consumption of a food or food constituent, in the context of the total diet, to the reduced risk of developing a disease or health-related condition.

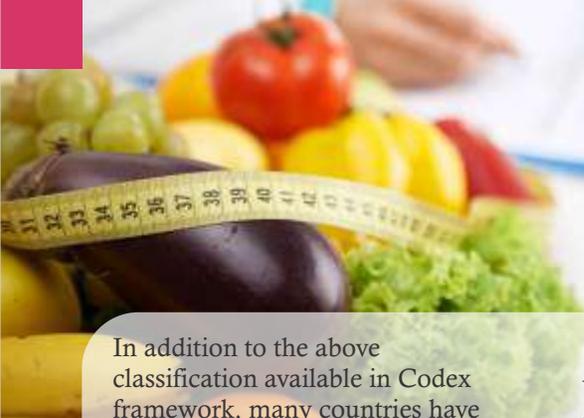


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In addition to the above classification available in Codex framework, many countries have already developed their own frameworks to deal with claims. At the same time, in many other parts of the world, frameworks are still being discussed to effectively address specific concerns of local markets. Typical objectives of national labelling regulations are: to provide consumers with information; to assist consumers in making healthier choices and/or to encourage food manufacturers to develop healthy food products

Consumers and markets are at different levels of maturity both with regards to their ability to understand claims and the ability to enforce very complex mechanisms, hence development of national regulations is a vital step. Indian regulatory authorities (Food Safety and Standards Authority of India, Ministry of consumer affairs etc.) are also discussing revamping of current labelling and claims framework. Hopefully, the new framework will be issued soon and will be aligned with modern thought processes and global frameworks, so that it is able to address newer challenges.

While many sceptics view them as mere marketing techniques used by food companies, nutrition and health claims on foods do have the potential to contribute to the achievement of public health objectives. Nutrition labelling provides consumers with information about the nutritional properties of a food and nutrition & health claims provide information to consumers about the nutritional

and health advantages of particular foods or nutrients. However, this role will only be effective when there are clear guidelines, and the industry takes responsibility in adhering to the guidelines, regardless voluntary or mandatory.

We need to realize that whichever framework is enforced, that framework will become dated one day. This is especially important in today's age, when scientific developments are occurring at a much faster pace compared to developments in regulatory frameworks. New scientific developments require newer claims to be created, approved and regulated. Therefore, there will be a need for two approaches at all times. First, how can we govern existing claims and second, how can we approve new claims. To address this need, a general guidance is available in Codex Guidelines for use of nutrition and health claims (CAC/GL 23-1997) in two forms.

1. Guidelines for making nutrition and health claims
2. Recommendation on scientific substantiation of health claims

Codex has provided general guidelines on making claims in CAC/GL 1-1979, and specific guidelines on making nutrition and health claims in CAC/GL 23 – 1997. Some of the important guidelines from CAC/GL 23 – 1997 are:

1. Nutrient Content Claims:

- A table has been provided which gives conditions for making a content claim.

2. Comparative Claims:

- Foods being compared should be similar,
- amount of difference in energy of nutrient content should be provided,
- Minimum of 25% difference for energy value, and 10% of NRV for micronutrients should be there.

3. Health Claims:

- Health claims must be based on current relevant scientific substantiation and the level of proof must be sufficient to substantiate the type of claimed effect and the relationship to health as recognized by generally accepted scientific review of the data and the scientific substantiation should be reviewed as new knowledge becomes available.

- The health claim must consist of two parts:

- Information on the physiological role of the nutrient or on an accepted diet-health relationship, followed by
- Information on the composition of the product relevant to the physiological role of the nutrient or the accepted diet-health relationship unless the relationship is based on a whole food or foods whereby the research does not link to specific constituents of the food.

- Health benefit should arise from consumption of reasonable quantity of food

- If the claimed benefit is attributed to a constituent in the food, for which a Nutrient Reference value is established, the food in question should be:

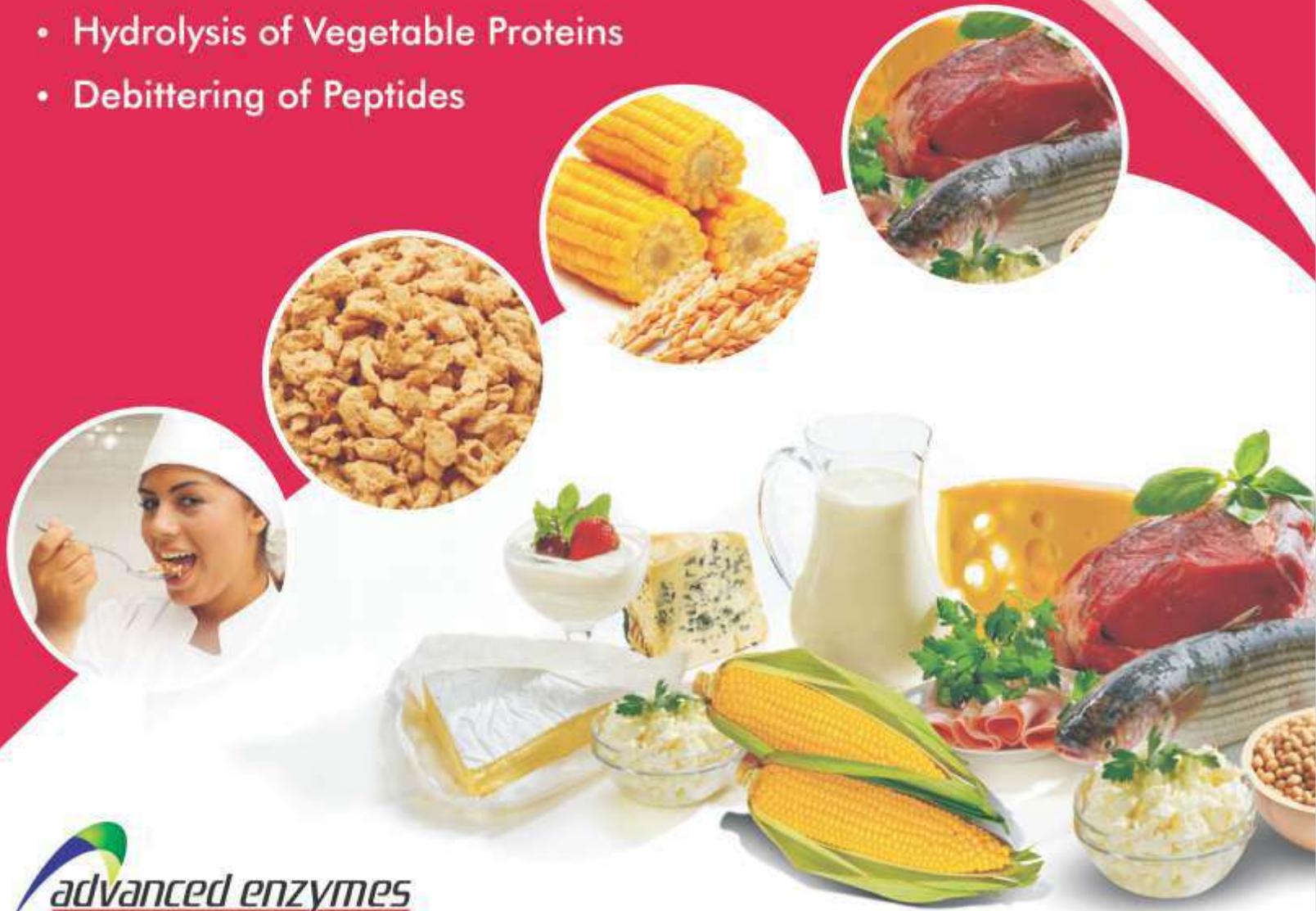
- a source of or high in the constituent in the case where increased consumption is recommended; or,
- low in, reduced in, or free of the constituent in the case where reduced consumption is recommended.

4. Claims related to Healthy Diets:

- Claims related to a “healthy diet” or any synonymous term are considered to be claims about the pattern of eating contained in dietary guidelines and should be consistent with the guidelines
- Foods which are described as part of a healthy diet, healthy balance et cetera, should not be based on selective consideration of one or more aspects of the food.

# Enzymes for Protein Modification

- Meat Tenderization / Fish Protein Hydrolysis
- Gluten Hydrolysis & Production of Savory Flavours
- Hydrolysis of Vegetable Proteins
- Debittering of Peptides



They should satisfy certain minimum criteria for other major nutrients related to dietary guidelines

- Foods should not be described as “healthy” or be represented in a manner that implies that a food in and of itself will impart health. However, foods may be described as part of a “healthy diet” provided that the label carries a statement relating the food to the pattern of eating described in the dietary guidelines.

Codex recommends to follow a well-designed process for the substantiation of health claims. Generally systematic review of the scientific evidence for health claims by national authorities takes into account the general principles for substantiation and includes the following steps:

Identify the proposed relationship

between the food or food constituent and the health effect;  
Identify appropriate valid measurements for the food or food constituent and for the health effect;  
Identify and categorize all the relevant scientific data;  
Assess the quality of and interpret each relevant scientific study;  
Evaluate the totality of the available relevant scientific data, weigh the evidence across studies and determine if, and under what circumstances, a claimed relationship is substantiated.

While there are guidelines available on which criteria should be fulfilled, such criteria will vary on a case by case basis. In some cases, well-designed human intervention studies are an absolute must. In other cases, observational evidence or already existing scientific literature can be accepted.

In a nutshell, nutrition and health claims are an important way of communicating benefits of science to the consumers. Real benefits of this communication can be achieved only if an environment of trust between the food companies and consumers is created, where consumers believe in truthfulness of claims being made. Regulatory frameworks have this very important role to play in creating this environment of trust by providing a transparent framework of governance for nutrition and health claims, so that only well substantiated claims reach the market place. It is only this trust, which can help realize the health benefits of scientific developments, both for marketers and consumers alike.

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## COMING EVENTS

**19th China (Beijing) International Nutrition & Health Industry Expo 2017**

**December 27-29, 2017**

Beijing exhibition Center (Downtown)

Next to Beijing Zoo, Beijing

**W:** [www.hecexpo.com](http://www.hecexpo.com)

**T:** +86-10-58907132

**E:** [songxq123@hotmail.com](mailto:songxq123@hotmail.com)

**GOED Exchange February 6 - 8, 2018**

Location: Seattle, WA

**T:** (480) 990-1101 (USA)

**E:** [suppliesidewest@virgopub.com](mailto:suppliesidewest@virgopub.com)

**W:** [www.goedexchange.com](http://www.goedexchange.com)

**20th International conference on Nutrition, Food Science and Technology**

**April 16-17, 2018**

Location: Dubai, UAE

**E:** [foodtechnology@](mailto:foodtechnology@nutritionalconference.com)

[nutritionalconference.com](http://nutritionalconference.com)

**IFT 18**

**A Matter of Science + Food**

**July 15-18, 2018**

Chicago, IL, USA

**W:** [lftevent.org](http://lftevent.org)

**21st World Congress on Nutrition & Food Sciences**

**July 09-10, 2018**

Sydney, Australia

**E:** [worldnutrition@](mailto:worldnutrition@conferencesworld.org)

[conferencesworld.org](http://conferencesworld.org)

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# BRIEF REPORT ON NUTRITION AWARENESS PROGRAMME 4TH AUGUST 2017, DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY, PONDICHERRY UNIVERSITY, PONDICHERRY.



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As part of annual nutrition awareness activity of PFNDAI, one day programme was conducted at the Culture Convention Centre Auditorium of Pondicherry University on the 4th August 2017.

The programme had two components, competitions for UG and PG students in the first half and seminar on food and health in the afternoon. The programme had a good response, with 156 students coming from Pondicherry University Pondicherry, Bharathidasan College for Women, Pondicherry and Anna University Chennai participating in the programme.

There were totally 3 competitions, namely, poster making, recipe making as well as nutri-quiz competition.

### Poster making competition:

This was a solo competition where the theme was announced on the spot and the participants were asked work on the given concept in 60 minutes.

A total of 20 students participated in the competition and after the completion of the competition, the posters were displayed for judges to

**Judging Posters**



evaluate. After critical review, judges recommended three awards, bagged by following candidates:

### Recipe making competition:

This was a team events with two recipes. Total 9 teams

participated in the competition.

Displayed recipes were critically evaluated by the judges by giving importance to the theme as well as innovativeness members in a team. Theme was given to the participants well in advance and were asked to come with. Following three winners were finalised by the judges:

### Quiz competition:

There was a very good response to the quiz competition, which was a team event with three persons per team. A total of 37 teams participated in the competition. The competition was conducted at two levels. First level was written round and the top scoring 6 teams were taken further for the stage round.

In the stage round, first stage was question and answers and the second

was concept round. Competition was very intense.

**Award Winners**



Students Quiz Competition



Presentation by Dr. Lewis

Post lunch session was symposium with the concept of “Food and health”. There were four speakers, namely, Dr. Joseph Lewis, who spoke on “Health ingredients: improving quality of life”, Dr. Ramasubramanian on “Proteins of future”, Mrs Tangamani from Dietician from Mohan Diabetic Centre Chennai (sponsored by Danon India) spoke on “The nutritional fulcrum” and lastly, Mr. Ravikiran from Marico Industries Pondicherry spoke on “Quality in food processing”. The sessions were

holds a degree in Nutrition. Dr. Prathap Kumar Shetty, Professor and Head of the Department of Food Science and Technology, Pondicherry University and also the local convener of the programme welcomed the gathering and requested Dr. Ramasubramian to give a brief background the theme of the programme.

Dr. Ramasubramanian gave background on the PFNDAI and detailed the various programmes and initiatives conducted by

very informative and interactive.

After the symposium, closing ceremony and prize distribution was conducted presided by Dr. R. Samyukta, University Librarian, who also

PFNDAI including the origin and scope of nutrition awareness programme conducted annually by the organization. Dr. Ramasubramanian took this opportunity to acknowledge the sponsors of the programme, namely, Marico Limited, Kelloggs as well as Danone India, without whose support the programme would not have been possible. Mr. Arun from Marco Limited in his talk appreciated the efforts of PFNDAI and also appreciated the successful conduct of the programme.

Prizes for the various competitions conducted in the morning were announced and certificates and vouchers were handed over to the winners. Dr. R Samyukta, in her presidential address drawn attention towards the appreciated the efforts of PFNDAI in creating awareness on health and nutrition through programmes like this to students from nutrition background to make them brushed with latest developments in the field of nutrition. These students can further spread their knowledge in the society. The programme ended with vote of thanks.

### Speakers

### Health & Food



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# REGULATORY ROUND UP



By  
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PFNDAI conducted an interesting and informative seminar titled “Nutrient & Health Claims of Food Products” on 8th of November and very interestingly, the much-awaited draft regulation on “Claims and Advertisements” was put on the FSSAI website on the same day.

## Standards

Much awaited draft regulation on “Claims and advertisements”, considered as one of the last frontiers of food regulation, has been published. The regulation is applicable to claims made on label, all forms of advertisements (print and electronic media), e commerce platforms, etc. It defines nutrient content, health and disease risk reduction claims. The regulation stipulates condition for claims such as “high”, “low”, “free” in case of nutrients and health claims.

Comparative claims between two

similar foods are permitted which need to comply with certain conditions. The regulation permits certain specific disease risk reduction claims along with the conditions and wordings. The regulation also defines the condition for very common claims, which have been indiscriminately used, like “natural”, “fresh”, “traditional”, “no added sugar” etc. The readers are requested to review their claims on their labels and other promotional material against the draft regulations.

Claims other than those permitted can be made only after prior approval. The regulation on functional foods also has some aspects of claims covered. This may cause confusion and it would be advisable to have one vertical regulation on claims. Please send in your comments within 30 days in the prescribed format

A draft regulation listing additional additives in different categories of food. These were missed in the horizontal standard published on 5th September 2016.

Final notification on the standards of Tapioca sago

Final notification setting upper limit for total polar compound in vegetable oils. This parameter is a good marker on the status of oil during frying and can be incorporated as a process check.

Implementation of labelling provisions with regard to class title, trans fat and saturated fat have been extended to 31st December 2017. This extension is given to exhaust the stocks of label.

Organic food regulation has been operationalized with immediate effect

A few amendments in the microbiological standards of milk, meat and their products.

The condition that release to the market, only after obtaining results, has been waived keeping in mind short shelf life products like pasteurized milk, chilled meat, etc.



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**DECERNIS**

### General

An order regarding iron filing in tea. The upper limit for iron filings in tea was increased to 250 mg per kg from 150 mg per kg. However, as there are no reliable test methods yet, the order requests the food safety officers not to launch prosecution in case of samples picked prior to 19.05.2016.

Latest list of FSSAI notified laboratories. The list contains scope of testing, contact details and NABL validity.

FSSAI announces new fees structure for sampling, testing, etc during import of foods.

A new detailed import manual has been put out by FSSAI

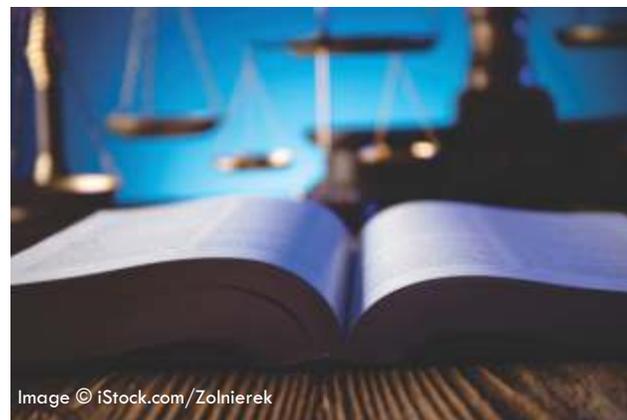


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## RESEARCH IN HEALTH & NUTRITION

### Chocolate may cut risk of irregular heartbeat by a fifth

Medical News Today 24 May 2017  
by Honor Whiteman

**Succumbed to that bar of chocolate? New research suggests that you shouldn't feel too guilty.**

Eaten in moderation, chocolate could reduce your risk of irregular heartbeat by a fifth. Researchers suggest that moderate chocolate intake may lower the risk of irregular heartbeat. From an analysis of more than 55,000 adults from Denmark, researchers found that eating between 2 and 6 ounces of chocolate every week was associated with a 20 percent reduced risk of atrial fibrillation (A-fib).

Lead study author Dr. Elizabeth Mostofsky, of the Department of Epidemiology at Harvard T. H. Chan School of Public Health in Boston, MA, and colleagues recently reported their findings in the journal *Heart*.

More than 2.7 million people in the United States are living with A-fib. A-fib is characterized by the rapid, irregular beating of the upper heart chambers, or the atria. As a result, the flow of blood into the ventricles is compromised.

According to the American Heart Association, patients with A-fib are five times more likely to have a stroke and are at double the risk of heart-related death. Adhering to a healthful diet is considered one of the key prevention strategies for A-

fib. Could chocolate form a part of that diet? The new study suggests so.

Up to 20 percent lower A-fib risk with moderate chocolate intake To reach their findings, Dr. Mostofsky and colleagues analyzed the data of 55,502 adults who were part of the Danish Diet, Cancer and Health Study. Subjects were recruited to the study between 1993 and 1997, at which point their body mass index (BMI), cholesterol levels, and blood pressure were measured. Participants were also required to complete dietary, health, and lifestyle questionnaires, which the researchers used to gather data on overall health and chocolate intake.

Using information from the Danish

Image © iStock.com/NatashaPhoto

National Patient Register, the researchers identified 3,346 cases of A-fib among the participants during the 13.5 years of follow-up. They were compared with subjects who consumed just 1 ounce of chocolate less than once each month, those who consumed 1 to 3 ounces of chocolate per month had a 10 percent reduced risk of A-fib. Participants who ate 1 ounce of chocolate per week were found to have a 17 percent lower risk of A-fib, while those who consumed 2 to 6 ounces each week were 20 percent less likely to develop A-fib. When it came to higher chocolate intake, the benefits began to fade; subjects who ate at least 1 ounce of chocolate daily were found to have a 16 percent lower risk of A-fib.

#### A little chocolate may aid heart health

According to Dr. Mostofsky, these findings suggest that consuming just small to moderate amounts of chocolate - especially dark chocolate, which is higher in antioxidants - can benefit the heart. "Eating excessive amounts of chocolate is not recommended, however, because many chocolate products are high in calories from sugar and fat and could lead to weight gain and other metabolic problems," she cautions. "But moderate intake of chocolate with high cocoa content may be a healthy choice."

This is not the first study to link moderate chocolate intake to better heart health. Research reported by Medical News Today last year, for example, found that eating a small amount of chocolate every day may lower the risk of heart disease. According to Dr. Mostofsky and team, their study provides further evidence of the heart health benefits of moderate chocolate intake. "This study adds to the growing body of evidence that, compared with other snacks or treats, eating small amounts of dark chocolate on a regular basis as part of an overall

balanced, heart-healthy diet is a good option that may reduce the risk of cardiovascular disease." Study co-author Dr. Murray Mittleman, Harvard T. H. Chan School of Public Health

#### Eating more fibre may lower risk of osteoarthritis

Medical News Today 24 May 2017 by Ana Sandoiu

**Osteoarthritis affects millions of people both worldwide and across the United States. New research shows that a diet rich in fiber may lower the risk of developing painful knee osteoarthritis.**

Fruit and whole-grain cereals are excellent sources of fibre. Osteoarthritis (OA) is the most common type of arthritis, affecting more than 30 million U.S. adults. Worldwide, it is estimated that almost 10 percent of men and 18 percent of women aged 60 and over live with symptomatic OA.

Also known as "wear and tear" arthritis, the joint disorder affects elders in particular, with women over the age of 50 being the most likely to develop the condition. New research - published in the journal *Annals of the Rheumatic Diseases* - investigates the link between a diet rich in fibre and the risk of developing knee OA.

The new study consists of a meta-analysis examining two long-term studies on the benefits of a fibre-rich diet. The study was a collaborative effort between researchers from Tufts University in Boston, MA, and the University of Manchester in the United Kingdom. The first author of the study is Dr. Zhaoli Dai, of the Human Nutrition Research Center on Aging and Friedman School of Nutrition Science and Policy at Tufts University. Previous studies have shown that a diet rich in fibre

has various health benefits, from lowering blood pressure and weight, to reducing inflammation and improving blood sugar levels. Good sources of fibre include nuts, legumes, fruit, whole grains, and non-starchy vegetables.

#### Studying the link between OA and fibre intake

The studies included in the new research were the Osteoarthritis Initiative (OAI) (which examined a total of 4,796 participants) and the Framingham Offspring Osteoarthritis Study (which comprised 1,268 participants). The researchers determined the participants' fibre intake at the beginning of the study using a food frequency questionnaire. They also assessed incident radiographic OA and symptomatic OA - that is, they used X-rays to determine OA and recorded OA symptoms, the most common of which include knee pain, stiffness, and swelling.

The participants were clinically followed every year for 48 months as part of the OAI study, and they were evaluated after 9 years as part of the Framingham study. Researchers also collected clinical data on other factors that may have influenced the results, including knee injury, medication, lifestyle, alcohol consumption, and physical exercise.

**High intake of fibre lowers risk of OA by 30 and 61 percent**  
Patients consumed an average of 15 grams of fibre every day in the OAI study, and 19 daily grams in the Framingham study. In the OAI

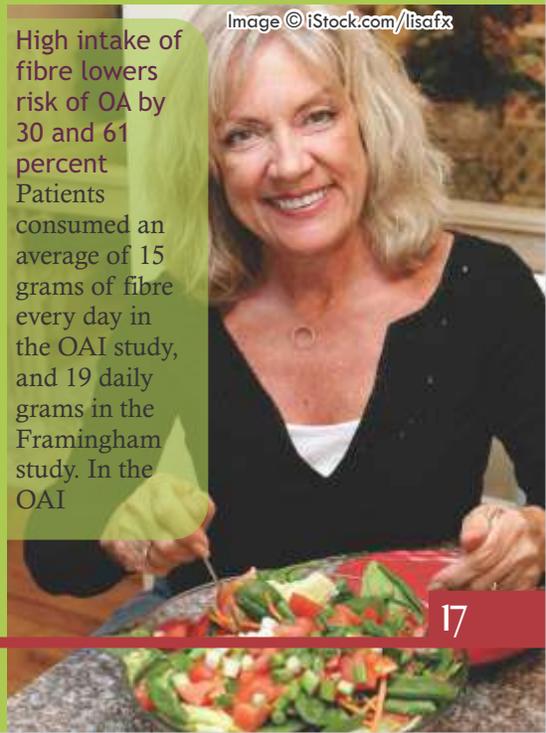


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study, at the end of the 4-year period, a total of 869 knees had OA symptoms, and 152 showed signs of OA on the X-ray. Additionally, the pain got worse in 1,964 knees. In the Framingham study, at the end of the 9-year period, 143 knees presented OA symptoms, and 175 showed signs of OA on the X-ray.

Overall, the statistical analysis indicated that a higher intake of fibre correlated with a lower risk of painful OA. Participants were divided into fourths, or quartiles, with the top quartile being compared with the lowest quartile in terms of fibre intake. The participants who consumed the most fibre had a 30 percent lower risk of OA in the OAI cohort, and a 61 percent lower risk of OA in the Framingham cohort, compared with those who consumed the least fibre.

Furthermore, the study revealed that consuming more fibre in general, as well as more cereal fibre in particular, significantly reduced the risk of the knee pain getting worse. However, as the study is observational, it cannot establish causality. Dr. Dai and colleagues conclude: "Findings from two longitudinal studies consistently showed that higher total fibre intake was related to a lower risk of [symptomatic OA], while the relation to [incident radiographic OA] was unclear."

### Drinking a Few Cups of Tea or Coffee a Day May Help Prevent Liver Fibrosis

07 Jun 2017 Nutrition Insight

According to a study published in the *Journal of Hepatology*, drinking coffee and herbal tea may protect against liver fibrosis, i.e. scarring of the liver resulting from chronic inflammation.

Because these beverages are

popular, widely available and inexpensive, they could have the potential to become important in the prevention of advanced liver disease.

"Over the past decades, we gradually deviated towards more unhealthy habits, including a sedentary lifestyle, decreased physical activity, and consumption of a 'Happy Diet'," explains lead author Louise J. M. Alferink, MD, of the Department of Gastroenterology and Hepatology, Erasmus MC University Medical Center, Rotterdam, The Netherlands.

"This Happy Diet, also known as the Western diet, is typically rich in unhealthy foods including processed foods lacking nutrients and artificial sugars. This has led not only to an obesity epidemic but also to a rapid increase in the prevalence of non-alcoholic fatty liver disease (NAFLD), which is due to extensive accumulation of fat in the liver and resembles alcoholic liver disease in people who do not exceed two drinks a day of alcohol. In this context, examining accessible and inexpensive lifestyle strategies that have potential health benefits, such as coffee and tea consumption, is a viable approach to finding ways to halt the rapid increase of liver disease in developed countries."

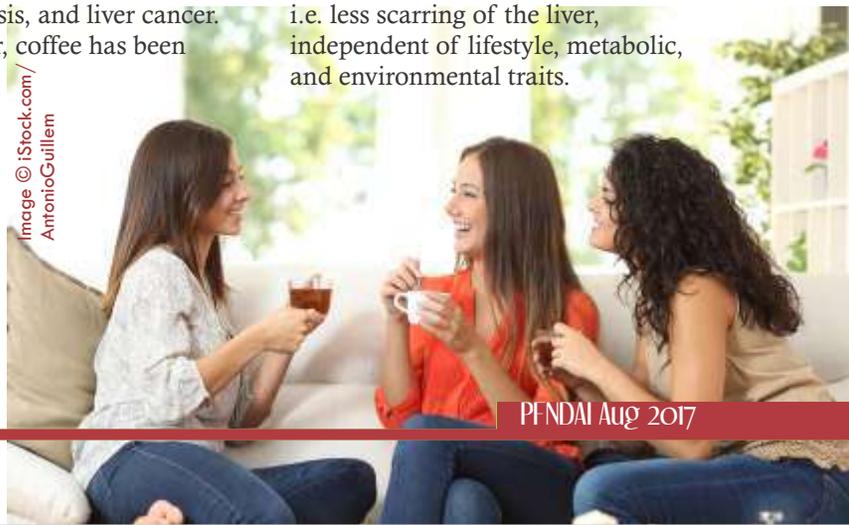
"There is quite some epidemiological, but also experimental data suggesting that coffee has health benefits on liver enzyme elevations, viral hepatitis, NAFLD, cirrhosis, and liver cancer. Beyond the liver, coffee has been demonstrated to be inversely associated with overall mortality in the general population. The exact mechanism is

unknown, but it is thought that coffee exerts anti-oxidant effects. We were curious to find out whether coffee consumption would have a similar effect on liver stiffness measurements in individuals without chronic liver disease," says Sarwa Darwish Murad, MD, Ph.D., principal investigator of the study and hepatologist at the Erasmus MC University Medical Center.

Data was gathered from 2,424 participants of the Rotterdam study, a large population-based cohort study including participants 45 years or older living in a suburb of Rotterdam, The Netherlands. All participants underwent an extensive physical work-up, including data collection for anthropometrics, blood sampling, hepatological imaging using abdominal ultrasound and Fibroscan, which quantitatively measures liver stiffness. In addition, they completed an externally validated 389-item Food Frequency Questionnaire, which included detailed information on coffee and tea consumption.

Coffee and overall tea consumption were divided into three categories: none, moderate (>0-3 cups per day), and frequent ( $\geq 3$ ). Tea consumption was categorized by herbal, green, or black tea and further into none (0) or any (>0) consumption.

Investigators found that frequent coffee consumption was significantly associated with lower odds of high liver stiffness values ( $\geq 8$  kPa as a proxy for liver fibrosis), i.e. less scarring of the liver, independent of lifestyle, metabolic, and environmental traits.



When they looked at the whole range of liver stiffness values, they found that both frequent coffee and any herbal tea consumption, even in small amounts, were significantly associated with lower liver stiffness values. Finally, while no direct association was found between either coffee or tea and the presence of fat accumulation in the liver (NAFLD) per se, the effect of coffee on lowering the liver stiffness was significant in both the group with and without liver fat. The authors concluded that frequent coffee and herbal tea seem to have beneficial effects on preventing liver scarring even before the overt liver disease has developed.

However, some caution in the interpretation of the results is necessary, as the study included only an elderly Caucasian population and there were few participants in the no-coffee or no-tea control groups, which limit a straightforward conclusion about the effect of coffee and tea on the liver.

The amount of tea consumed was generally low, making an estimation of any protective effect difficult. Two researchers, Salvatore Petta, MD, PhD, of the Section of Gastroenterology and Hepatology, Di.Bi.M.I.S., University of Palermo, Italy, and Giulio Marchesini, MD, of the Department of Medical and Surgical Sciences (DIMEC), note that more than 100 components are present in coffee and tea, including polyphenols and caffeine, which are contained in both beverages in very different and variable amounts. Hence, when asked “Should we add regular coffee and tea breaks to our daily life?” Dr. Petta and Dr. Marchesini conclude that “before this policy can be recommended, prospective studies are needed to identify the optimum amounts and the type(s) of coffee and tea leading to more favourable liver outcomes.”

Chronic liver diseases rank as the 12th cause of death worldwide, and many of these disorders are associated with unhealthy lifestyles. Conversely, a healthier lifestyle can help prevent or reverse liver disease. Liver-related mortality is closely related to the development of cirrhosis, the final consequence of progressive fibrosis.

### Almost 60 Percent of People Trust Nutrition Advice from Under-qualified Professionals

12 Jun 2017 Nutrition Insight

A recent Populus survey of over 2000 people conducted on behalf of the British Dietetic Association (BDA) shows that the UK public don't know who to trust for advice on diet and nutrition. The poll showed 58% of people stated that they would trust diet and nutrition advice provided to them by their personal trainer and fitness instructor.

Nutrition and diet qualifications undertaken by personal trainers and fitness instructors will vary, with some online courses available that last as little as 12 weeks or even less, before an individual is classed as “qualified.” Additionally, there is no governing body to quality assure the nutrition training that these professionals undertake and there is no legal body to report these individuals to if the dietary advice they provide is incorrect or unsafe.

As part of their annual Dietitians Week, the BDA is encouraging people to seek sensible, evidence-based diet advice, from a qualified professional, such as a registered dietitian. From 12-16 June, the BDA is promoting and highlighting the

importance of Evidence and Expertise in relation to diet and nutrition. The BDA was pleased to see that 82% of people surveyed said they would trust a dietitian for their dietary advice. Dietitians are the only legally regulated nutrition professionals in the UK and must complete a three-year degree as a minimum requirement. They provide diet and nutrition advice based only on the most up-to-date evidence and report to a governing body called the Health and Care Professions Council.

The BDA, founded in 1936, is the professional association and trade union for dietitians in Great Britain and Northern Ireland. It is the nation's largest organization of food and nutrition professionals with almost 9,000 members. Young people were found to be most likely to put their trust in less scientific sources of diet and nutrition advice. In the 18-24 year-old age group, 75% said they trusted such advice provided to them by a personal trainer or fitness instructor. 41% of this same age group would trust the advice of a “healthy eating blogger.”

The BDA's survey also found that 35% of people would trust diet and nutrition advice provided to them by a TV chef and that women were particularly vulnerable to trusting under-qualified or unqualified professionals. Siân O'Shea, Registered Dietitian, says, “Following diet and nutrition advice that is not based on sound research and evidence is less likely to be effective and can pose a threat to your health and may cause severe harm.”



The same Populus survey also found that 40% of the public have tried or considered trying a “fad” diet in an attempt to lose weight. These diets are often promoted by celebrities or come from other unqualified sources, but with little evidence to support them. “Fad diets often promise unrealistic outcomes and some are actually unsafe,” continues Siân. “If you follow unsafe dietary advice, you may become deficient in key nutrients, which can lead to various issues such as fatigue, weak bones, malnutrition or worse. This is why it is so important to make sure you get advice from a properly trained professional such as a registered dietitian.”

**Red Onions Pack a Cancer-Fighting Punch: Study**  
09 Jun 2017 Nutrition Insight

In the first study to examine how effective Ontario-grown onions are at killing cancer cells, University of Guelph researchers have found that not all onions are created equal and that red onions have the strongest cancer-fighting power.

Onions as a superfood are still not well known. But they contain one of the highest concentrations of quercetin, a type of flavonoid, and Ontario onions boast particularly high levels of the compound compared to some parts of the world. Engineering professor Suresh Neethirajan and Ph.D. student Abdulmonem Murayyan tested five onion types grown in Ontario and discovered the Ruby Ring onion variety came out on top.

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The Guelph study revealed that the red onion not only has high levels of quercetin, but also high amounts of anthocyanin, which enriches the scavenging properties of quercetin molecules, says Murayyan, study's lead author. “Anthocyanin is instrumental in providing colour to fruits and vegetables so it makes sense that the red onions, which are darkest in colour, would have the most cancer-fighting power.”

Published recently in Food Research International, the study involved placing colon cancer cells in direct contact with quercetin extracted from the five different onion varieties. “We found onions are excellent at killing cancer cells,” says Murayyan. “Onions activate pathways that encourage cancer cells to undergo cell death. They promote an unfavourable environment for cancer cells, and they disrupt communication between cancer cells, which inhibits growth.”

The researchers have also recently determined onions are effective at killing breast cancer cells. “The next step will be to test the vegetable's cancer-fighting powers in human trials,” says Murayyan. These findings follow a recent study by the researchers on new extraction technique that eliminates the use of chemicals, making the quercetin found in onions more suitable for consumption.

Other extraction methods use solvents that can leave a toxic residue which is then ingested in food, says Neethirajan. “This new method that we tested to be effective only uses super-heated water in a pressurized container,” he says. “Developing a chemical-free extraction method is important because it means we can use onion's cancer-fighting properties in nutraceuticals and in pill form.” While we can currently include this superfood in salads and on burgers as a preventative measure, the

researchers expect onion extract will eventually be added to food products such as juice or baked goods and be sold in pill form as a type of natural cancer treatment.



A study published in The New England Journal of Medicine and funded by the Bill and Melinda Gates Foundation suggests that worldwide, 2.2 billion adults and children suffer from health problems related to being overweight or obese. In addition, about 30% of the world's population is affected by weight problems, with 10% listed as obese.

The researchers analyzed data from 68.5 million persons to assess the trends in the prevalence of overweight and obesity among children and adults between 1980 and 2015. Using the Global Burden of Disease study data and methods, they also quantified the burden of disease related to high body-mass index (BMI), according to age, sex, cause, and BMI in 195 countries between 1990 and 2015. In 2015, a total of 107.7 million children and 603.7 million adults were obese. Since 1980, the prevalence of obesity has doubled in more than 70 countries and has continuously increased in most other countries. Although the prevalence of obesity among children has been lower than that among adults, the rate of increase in childhood obesity in many countries has been greater than the rate of increase in adult obesity.

High BMI accounted for 4.0 million deaths globally, nearly 40% of which occurred in persons who were not obese. More than two thirds of deaths related to high BMI were due to cardiovascular disease. The disease burden related to high BMI has increased since 1990; however, the rate of this increase has been attenuated owing to decreases in underlying rates of death from cardiovascular disease.

Among the 20 most-populous countries, the highest level of obesity among children and young adults was in the United States, at nearly 13%. Egypt topped the list for adult obesity at about 35%, while the lowest rates were in Bangladesh and Vietnam, respectively, at 1%. The United States with 79.4 million had the most obese adults, followed by China.

“The Global Burden of Disease (GBD) study that is now reported in the Journal offers a discouraging reminder that the global obesity epidemic is worsening in most parts of the world and that its implications regarding both physical health and economic health remain ominous,” wrote Edward Gregg, Centers for Disease Control and Prevention (CDC), and Jonathan Shaw, Baker IDI Heart and Diabetes Institute, in an accompanying editorial.

The research found obesity has tripled in youth and young adults in countries such as China, Brazil, and Indonesia. That was “the most worrisome finding” in the study, according to Gregg and Shaw. That suggests future increases in diabetes, high blood pressure, chronic kidney disease, and other health problems in much of the world.

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### Low vitamin K2 levels may increase risk for fracture in kids

IFT Weekly June 14, 2017

A new study, presented at the International Conference on Children's Bone

Health in Würzburg, Germany, suggests that children with low vitamin K2 levels have a higher risk of bone fractures.

While vitamin D has an established role in the prevention of fractures, this is the first study to evaluate both D and K2 status in healthy children with low-energy fractures (i.e., the result of falling from standing height or less) and in the control group without fractures.

The study group of 20 children aged 5–15, with clinically confirmed low-energy fractures was compared with the control group of 19 healthy children, aged 7–17, without fractures. Total vitamin D, calcium, BALP (bone alkaline phosphatase), NTx (N-terminal telopeptide), and undercarboxylated (ucOC) and carboxylated osteocalcin (cOC) serum concentrations were evaluated in every patient. The researchers used the ratio of serum undercarboxylated osteocalcin to serum carboxylated osteocalcin ucOC:cOC (UCR) as an indicator of vitamin K status. They also created logistic regression models to establish UCR influence for odds ratio of low-energy fractures in both groups.

The results revealed there were no statistically significant differences in the serum calcium, NTx, BALP, or vitamin D levels between the groups; however, the

statistically significant difference in the UCR was observed. The median UCR in the fracture group was 0.4709 compared with the control group value of 0.2445.

“Children with bone fractures have two times lower vitamin K status expressed by UCR than healthy controls,” the authors wrote. “Increase of the UCR by 0.1 increases the risk of fracture by 9.62 times. The better vitamin K status expressed as the ratio of ucOC:cOC (UCR) have positively and statistically significantly correlated with lower rate of low-energy fracture incidence.”

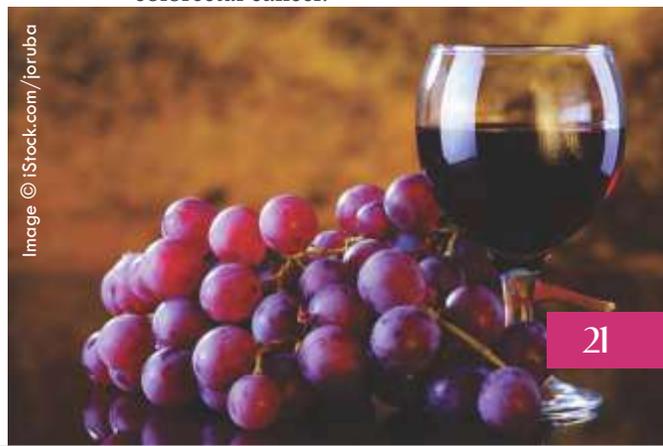
### Grape extracts may protect against colon cancer

Medical News Today 20 June 2017 by Ana Sandoiu

Colon cancer is a very common form of cancer, affecting tens of thousands of people across the United States. Researchers may have just moved closer to a prevention strategy for this condition, as a compound that suppresses colon cancer stem cells is found in grapes.

Resveratrol, which is naturally found in grapes, taken together with grape seed extract may suppress colon cancer stem cells. In the U.S., colorectal cancer is the third leading cause of death from cancer among women and the second in men. The American Cancer Society estimate that in 2017, more than 95,500 people will develop cancer of the colon, almost 40,000 people will have rectal cancer, and more than 50,000 deaths will be caused by colorectal cancer.

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A team of researchers led by Jairam K. P. Vanamala, associate professor of food sciences at the College of Agricultural Sciences at Pennsylvania State University in State College, set out to examine the effects of grape compounds on colon cancer stem cells. More specifically, the researchers tested the effect of a combination of resveratrol - a polyphenolic compound found in grapes, red wine, peanuts, and some berries - and grape seed extract.

As the authors write, the study rests on the theory that "most, if not all, cancerous tumours are driven by cancer stem cells. Cancer stem cells are capable of self-renewal, cellular differentiation, and maintain their stem cell-like characteristics even after invasion and metastasis," explains lead researcher Prof. Vanamala. The findings were published in the journal *BMC Complementary and Alternative Medicine*.

Grape extracts halved cancer tumours Prof. Vanamala and colleagues examined 52 mice with colon cancer tumours. They divided the rodents into three groups: one group was fed the grape compound combination, another group was fed sulindac (an anti-inflammatory drug previously found to reduce tumours in humans), and one group was given a normal diet. The researchers found that the number of tumours in the mice that had the grape compound diet decreased by 50 percent. This drop was similar to the one seen in the sulindac group, but unlike the anti-inflammatory drug, the grape compounds did not cause any gastrointestinal toxicity.

In vitro, the experiments yielded similar results, determining the "molecular basis for the beneficial effect" of the grape compounds on human cancer stem cells. The study also found that resveratrol and grape seed extract did not suppress cancer stem cells as effectively when taken separately and in small doses. It seems to be the combined effect of the

two that produces the best results. "The combination of resveratrol and grape seed extract is very effective at killing colon cancer cells," says Prof. Vanamala. "And [...] the combination of these compounds is not toxic to healthy cells."

#### Colourful diet may prevent colon cancer

Prof. Vanamala suggests that the findings may bring us closer to understanding why cultures that traditionally eat more fruits and vegetables have lower colon cancer rates. For instance, some studies have hypothesized that the West African diet may be the reason that Nigerians have a much lower rate of colon cancer compared with Caucasians.

Nigeria, along with other African countries, has been shown to have the lowest cancer rates in the world. Plant-based diets may provide several key compounds that kill off cancer stem cells, says Prof. Vanamala. He also recommends consuming a large variety of colourful fruits and vegetables to prevent colon cancer and other chronic conditions such as type 2 diabetes. "This also connects well with a plant-based diet that is structured so that the person is getting a little bit of different types of plants, of different parts of the plant, and different colours of the plant. Prof. Jairam K. P. Vanamala

He adds, "This seems to be beneficial for not only promoting bacterial diversity, but also preventing chronic diseases and eliminating the colon cancer stem cells." However, Prof. Vanamala also adds that more work is needed to fully understand the anti-cancer mechanism behind grape compounds and other extracts in fruit and vegetables.

The researchers hope that their findings will set the stage for human trials that could test the effects of the grape compounds on colon

cancer. If these trials are successful, the researchers hope that the combination of resveratrol and grape seed extract could be taken in the form of a pill; this may protect against colon cancer and prevent the disease from recurring in those who survived the condition.



Image © iStock.com/Eike Leppert, klenova, kellyreekolibry

#### Turmeric, red grape, and apple compounds 'starve' prostate cancer cells

Medical News Today 19 June 2017 by Honor Whiteman

**What do turmeric, apples, and grapes have in common? According to a new study, they could hold the key to preventing and treating one of the most common cancers in the United States.**

An apple peel compound can halt the growth of prostate cancer cells when combined with compounds from red grapes or turmeric. Researchers have identified a number of natural compounds that have the potential to "starve" prostate cancer tumours and shrink them. Compounds present in turmeric, red grapes, and apple peel appear to have the strongest effect, particularly in combination.

Study co-author Stefano Tiziani, of the Department of Nutritional Sciences and the Dell Pediatric Research Institute at the University of Texas at Austin, and colleagues recently reported their findings in the journal *Precision Oncology*. After skin cancer, prostate cancer is the most common cancer among men in the U.S. According to the American Cancer Society, there will be 161,360 new cases of prostate

cancer diagnosed this year, and around 26,730 men will die from the disease.

Previous studies have identified a number of compounds, particularly found in plant-based foods, that have the potential to reduce the risk of prostate cancer. For this latest study, Tiziani and colleagues used a novel, high-throughput screening technique to test 142 natural compounds, with the aim of identifying those that are most effective for halting the growth of prostate cancer cells.

Compound combination blocked tumour growth in mice  
The compounds were tested on prostate cancer cells derived from mice and humans, individually and in combination. The team identified three compounds that were most effective for halting prostate cancer cell growth:

- curcumin, the bright yellow compound in turmeric
- ursolic acid, found in apple peel
- resveratrol, found in red grapes and berries

These three compounds were then tested in mouse models of prostate cancer. The researchers found that when ursolic acid was combined with either curcumin or resveratrol, the natural compounds prevented the uptake of glutamine by prostate cancer cells, which prevented tumour growth in the mice.

Glutamine is an amino acid that prostate cancer cells need in order to grow, so preventing its uptake effectively "starves" the cancer cells to death. What is more, because ursolic acid, curcumin, and resveratrol are natural compounds, they did not cause any toxic effects in the mice. However, the researchers note that the concentrations of each of the three compounds were higher than that which is normally consumed through diet. Still, the team believes that the findings show promise for a natural strategy to prevent and treat prostate cancer. "These nutrients have

potential anti-cancer properties and are readily available. We only need to increase concentration beyond levels found in a healthy diet for an effect on prostate cancer cells." Stefano Tiziani

### Garcinia cambogia: Does it work?

Medical News Today 22 June 2017 by Jon Johnson

The garcinia cambogia fruit has been a focus for many people looking for natural ways to lose weight. The small fruit, which resembles a cross between a pumpkin and a tomato, is native to India and Southeast Asia and is exported all over the world.

#### What is garcinia cambogia?

The garcinia cambogia fruit is native to India and Southeast Asia and is marketed as a natural weight loss food. Finding out what garcinia cambogia is and how it works can help people understand whether the weight loss claims are true and whether the supplement will work. It is also important to realize that there are some risks and interactions to be aware of when using garcinia cambogia. Garcinia cambogia contains an ingredient called hydroxy citric acid (HCA), which has been used to aid weight loss. The extract of HCA is available in powdered form or pill form and can be purchased online or in health stores.

#### Claims of garcinia cambogia

The use of garcinia cambogia and its extracts has been the subject of many health claims over the years. These claims range from mild to incredible, so it is important to separate fact from marketing when considering using supplements, such as this.

#### Weight loss

Garcinia cambogia is

primarily marketed as a way to lose weight naturally with little to no additional effort. Some companies claim the supplement can help people lose weight without additional exercise or dieting. It is true that the HCA in garcinia has been found to boost the fat-burning potential of the body. One review posted to Evidence-Based Complementary and Alternative Medicine showed that garcinia did promote weight loss in many cases. But results vary widely. Some studies using HCA have produced amazing weight loss results, while others showed the supplement had little to no effect. Researchers note that the majority of the studies done on garcinia or HCA used animal models. The little research that has been done on humans has found that the effects of the fruit are too widespread to call beneficial. It may work, and it may not.

A review posted to the Journal of Obesity compiled the results of nine different studies using garcinia for weight loss in humans. The findings confirmed mixed results of the supplement, with some studies producing significant results and others showing little difference. The average reduction in body weight was small, as the studies were only done for short periods of time. A study posted to Critical Reviews in Food Science and Nutrition pointed out how short most of the studies into garcinia cambogia were. Studies in humans have been done on a small number of people for a short amount of time. Longer tests need to be carried out on bigger groups of people to understand the safety and effectiveness of garcinia or HCA fully.



**Does diet matter?**

Garcinia cambogia extract may reduce weight gain alongside a high fat diet. Researchers looked at how a person's diet affected the supplement, noting that it was not as effective in people whose diets were low in fat and high in carbohydrate. Another study, posted to the Journal of Clinical Diagnostic Research found that taking garcinia cambogia extract along with a high-fat diet did reduce weight gain. However, a high-fibre diet may also reduce how well HCA works in the body. This research suggests that the garcinia and HCA depend upon a proper diet to be effective, which is the opposite of how it is marketed by manufacturers.

**Curbs appetite and makes the body feel full**

Another claim is that using garcinia or HCA can help the body feel full throughout the day. Reviews have found positive results in animal studies, but no human studies have found similar results. The absence of studies on humans to prove these claims does not mean that garcinia does not work. Some people who have used the supplement maintain that it helps them feel full all day and supports their weight loss.

**Athletic performance**

Garcinia cambogia is also marketed as a supplement that enhances athletic ability. Researchers found that both animal and human models provided some evidence for this claim. Using garcinia or HCA may increase endurance levels during exercise and stop people feeling exhausted too quickly. Long-term studies need to be carried out to support these claims, however.

**Other benefits**

Older studies have supported the claims that garcinia may be useful for lowering cholesterol. Again, these claims are not proven, and the results of studies are inconsistent. As such, it is not advised to use garcinia to lower cholesterol. Similarly, garcinia may be able to lower blood sugar levels in

some people. Doctors do not recommend that those who have diabetes take garcinia cambogia, as it may affect their medication, and cause their blood sugar to drop to dangerously low levels.

**Risks of using garcinia cambogia**

Garcinia cambogia is considered safe to eat, though there are some risks and considerations to keep in mind before using the fruit or its extract as a dietary supplement.

**Potency**

The United States Food and Drug Administration (FDA) do not regulate supplements, such as garcinia cambogia, in the same way as pharmaceutical drugs, which must meet stringent safety standards. As a result, manufacturers of herbal supplements only need to make their products safe to eat and provide clear labels. It is hard to determine how effective garcinia cambogia or HCA is because the supplement can vary in potency from brand to brand. Some manufacturers may also include other synergistic or filler ingredients into a blend, making it even harder to determine the proper dose.

**Side effects**

Side effects of garcinia cambogia may include nausea and headaches. Anyone choosing to take garcinia cambogia should be aware of the potential side effects.

Side effects of garcinia cambogia may include:

- ◆ headache
- ◆ nausea
- ◆ skin rash
- ◆ common cold symptoms
- ◆ digestive upset
- ◆ lower blood sugar

Certain products containing garcinia cambogia and HCA have also been linked to liver damage. However, there is conflicting evidence on whether or not garcinia cambogia caused the liver damage that was observed. As a rule, before taking any supplements, always talk to a

doctor first.

**Interactions**

Garcinia or HCA may interact with certain drugs. Some research shows that the supplement lowers blood sugar, so it may affect people with diabetes. It is always best to consult a doctor before starting any new drug or supplement. Anyone with prior liver or kidney damage may want to avoid garcinia. Also, there have not been enough studies done to determine if garcinia is safe for women who are pregnant or breastfeeding. As such, these women should avoid it.

**How much garcinia cambogia should you take?**

There is no standard dose when it comes to supplements. A recent review posted to Evidence-Based Complementary and Alternative Medicine compiled the research on the toxicity of the garcinia cambogia supplement at various levels. They concluded that no research had shown direct adverse effects in levels up to 2,800 milligrams each day. The best dose to take will vary significantly from person to person, and people should always discuss their options with a doctor beforehand.

**Overview**

Garcinia cambogia has been used for centuries. The fruit is safe to eat, and the supplements have helped many people lose weight. However, clinical evidence of its efficacy is mixed at this point. If a person is considering taking garcinia cambogia as a supplement, they should research it well and discuss it with a doctor before starting. Weight loss miracle pills often sell a future that does not exist. Maintaining a healthful diet and taking regular exercise are still two of the best ways to improve body weight. Supplements may help these efforts, but nothing will replace these important staples in a healthy lifestyle.

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LESS  
CALORIES

**50%#**  
DAILY VITAMIN  
NUTRITION

WITH EACH SERVE



15.8g-17.3g  
Protein



9.8g-10.9g  
Dietary Fibre



26 Vitamins  
& Minerals



Healthy meal  
in 1 minute



\*Compared to an average Indian meal. #As per RDA (ICMR, 2010)

Creative Visualization



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## Rheumatoid arthritis: Regular fish intake may ease symptoms

Published Wednesday 21 June 2017  
by Honor Whiteman

Patients with rheumatoid arthritis might want to increase their fish intake; a new study suggests that regular fish consumption may help to alleviate symptoms of the condition.

Eating more than two portions of fish weekly could benefit patients with RA. Researchers found that eating fish at least twice weekly led to a reduction in disease activity among people with rheumatoid arthritis (RA), compared with eating fish less than once per month. What is more, reduced disease activity was achieved with every additional portion of fish consumed each week.

Study leader Dr. Sara Tedeschi, of the Brigham and Women's Hospital and Harvard Medical School, both in Boston, MA, and colleagues recently reported their findings in the journal *Arthritis Care & Research*. RA is a chronic, progressive condition in which the immune system mistakenly attacks the joints, causing inflammation, swelling, and pain. RA can affect any joint, but it most commonly occurs in the joints of the wrists and hands.

Over time, inflammation of the joints may lead to a breakdown of cartilage, which is the connective tissue that protects the ends of bones. This can lead to joint deformities and mobility problems. According to the Arthritis Foundation, around 1.5 million people in the United States are living

with RA. There is no cure for RA, but symptoms may be managed through lifestyle changes, medication, and, in some cases, surgery. Some of these therapies can also help to slow disease progression. Based on the new study findings, Dr. Tedeschi and colleagues suggest that a simple dietary change may help to ease symptoms for patients with RA: increasing fish intake.

High fish intake poses benefits. The researchers came to their conclusion by analyzing data from 176 individuals with RA, all of whom were part of the Evaluation of Subclinical Cardiovascular Disease and Predictors of Events in RA cohort study. At study baseline, a food frequency questionnaire was used to gather information on participants' fish intake over the past year. Subjects were divided into four groups based on the frequency of their fish consumption: never to once per month; once each month to less than once per week; once each week; and more than twice per week.

Data were not available on the types of fish that participants consumed. The DAS28-CRP scoring system, which measures swelling, tenderness, pain, and blood markers of inflammation among patients with RA, was used to assess disease activity among participants. The median DAS28-CRP score for participants at study baseline was 3.5, the team reports.

Compared with participants who never ate fish or ate it less than once every month, the researchers found that subjects who consumed fish more than twice each week showed significantly lower disease activity, as represented by a DAS28-CRP score that was 0.49 points lower.

Furthermore, the team found that each additional portion of fish consumed every week was

associated with a 0.18-point drop in DAS28-CRP scores. Based on their findings, the team suggests that people with RA might benefit from including more fish in their diets. "If our finding holds up in other studies, it suggests that fish consumption may lower inflammation related to rheumatoid arthritis disease activity," says Dr. Tedeschi. "Fish consumption has been noted to have many beneficial health effects, and our findings may give patients with rheumatoid arthritis a strong reason to increase fish consumption."

## Lactobacillus from yogurt inhibits multidrug-resistant bacterial pathogens

Medical News Today 6 June 2017

A *Lactobacillus* isolate from commercial yogurt, identified as *Lactobacillus parafarraginis*, inhibited the growth of several multidrug-resistant/extended spectrum  $\beta$ -lactamase bacteria from patients at a hospital in Washington, D.C.

The research was presented at ASM Microbe 2017 in New Orleans, Louisiana. The inhibitory substance is a unique, bacteriocin-like peptide that is heat stable up to 121°C. Bacteriocins are antimicrobial peptides produced by bacteria and released to kill other related bacteria that are not immune to their action.



Image © iStock.com/YelenaYemchuk

findings from the study may hold promise for possible therapeutic application," said Rachelle Allen-McFarlane, doctoral candidate in the Biology Department at Howard University, Washington, D.C.

*Lactobacillus parafarraginis* KU495926, identified by 16S rRNA, was isolated from a sample of commercial yogurt on de Man-Rogosa-Sharpe agar by standard plate count technique under anaerobic conditions. The isolate exhibited the typical lactic acid bacterial characteristics: gram positive, catalase, oxidase, and motility negative. Screening of the antimicrobial activity by spot and well-diffusion assays showed that the isolate inhibited the growth of several multidrug-resistant/extended-spectrum  $\beta$ -lactamase gram-negative bacterial pathogens from a local hospital.

Analyses of the extract by fast-perfusion liquid chromatography (FPLC), SDS-PAGE, and PCR (polymerase chain reaction) suggested that the inhibitory agent is a bacteriocin.

### Later meal times can promote weight gain and upset metabolism

Medical News Today 6 June 2017 by Catharine Paddock PhD

For the first time, researchers offer experimental evidence that, compared with eating earlier in the day, a pattern of later meal times can promote weight gain and has an unfavourable impact on energy metabolism and hormonal markers that are linked to health problems such as diabetes and heart disease.

A new study has shown that regularly eating later in the day can have negative health consequences. A report on the findings - led by researchers from the University of

Pennsylvania's Perelman School of Medicine in Philadelphia - were presented at this year's joint meeting of the American Academy of Sleep Medicine and the Sleep Research Society. The study finds that compared with eating earlier in the day, eating later can have a negative impact on weight control, fat metabolism, and energy usage.

The researchers also found that a prolonged pattern of later eating results in higher levels of glucose and insulin (which is linked to higher risk for diabetes), and also of cholesterol and triglycerides (which are linked to cardiovascular problems).

Lead author Namni Goel, a research associate professor of psychology in psychiatry at the Perelman School of Medicine, explains that previous research has already shown that sleep loss can have a bad effect on weight and metabolism, and that this is partly attributed to eating later at night. However, the new findings suggest that timing of meal times on its own, independent of sleep, can affect weight and metabolism.

Daytime and delayed meal time patterns compared Prof. Goel says that the preliminary findings of their study - which is still ongoing - "give a more comprehensive picture of the benefits of eating earlier in the day." For the randomized crossover trial, nine healthy-weight adults (five men and four women) aged between 23 and 29 underwent two different daily meal time patterns: a daytime pattern, and a delayed eating pattern - both of which lasted for 8 weeks.

The 8-week patterns were separated by a 2-week "washout" period to

ensure that the first pattern did not carry over into the second. The daytime pattern consisted of three meals and two snacks eaten between 8 a.m. and 7 p.m. The delayed pattern also consisted of three meals and two snacks, except that these were consumed between 12 p.m. and 11 p.m.

Hormonal differences were also marked. For example, in the 8 weeks of daytime eating, levels of ghrelin (a hormone that stimulates appetite) peaked earlier in the day, and levels of leptin (a hormone that produces the sensation of fullness) peaked later. Such a combination could suggest that participants on the daytime eating pattern were more likely to receive eating cues earlier in the day, and by eating earlier, they also stayed satiated for longer.

The findings confirm those of similar, but much shorter, studies. However, the new study is the first long-term comparison of early and late meal time patterns that rules out possible influencing factors, such as the sleep-wake cycle, physical activity, and diet. While acknowledging that "lifestyle change is never easy," senior author Kelly Allison, an associate professor of psychology in psychiatry and director of the Center for Weight and Eating Disorders at the Perelman School of Medicine, says that their findings suggest that "eating earlier in the day may be worth the effort to help prevent these detrimental chronic health effects."



Image © iStock.com/AndreyPopov

She concludes: "We have an extensive knowledge of how overeating affects health and body weight, but now we have a better understanding of how our body processes foods at different times of day over a long period of time."

**The part of rice we don't eat may be highly nutritious**

Science Daily June 1, 2017

Rice bran, the outer covering of the rice grain, has high nutritional value and is a rich source of proteins, fats, minerals and micronutrients such as B vitamins, according to a study published in the open access journal *Rice*. Researchers at Colorado State University suggest that rice bran, which is removed from whole grain rice during processing and used as animal feed, could have benefits for human health and nutrition.

Professor Elizabeth Ryan, the corresponding author said: "A single serving of rice bran -- 28 grams according to USDA -- delivers more than half of a person's daily requirements of important vitamins such as thiamine, niacin and vitamin B6. Traditionally, rice bran is thought to be a cheap fibre source and only considered useful as a source of lipids, for example as cooking oil. It has not been used much in human health and nutrition because it is considered an animal feed but its high nutritional value warrants

Image © iStock.com/marekuliasz

greater public health attention."

The researchers used an approach called food metabolomics, or "Foodomics," which uses a sophisticated biochemical technique, called mass spectrometry, to identify and measure the abundance of many different molecules present in a food. Assessing three U.S. rice varieties that were previously used in human dietary intervention trials, the researchers found 453 metabolites, including 65 that had been shown to have potential medicinal and health promoting attributes and 16 that had not been reported for rice bran before.

Professor Ryan said: "We investigated the amino acids, vitamins, cofactors and secondary metabolites that can be found in rice bran, as we suspected that they contribute to its medicinal and nutritional benefits. We were surprised to find that cofactors, vitamins and amino acids make up almost 50% of the total small molecule content."

A literature search conducted by the authors showed that some of the compounds they identified in rice bran had been shown in previous studies to have anti-inflammatory, anti-microbial and anti-hypertensive properties, among others. Rice bran also has a protein content of 12-15% that deserves attention as it could help tackle nutrition shortages that are a major global health concern.

Professor Ryan said: "Rice is an essential staple food for more than half of the world's population. It is grown in more than 100 countries. Rice bran as a food ingredient could deliver more than 400 individual compounds when consumed and it is likely that many of them function in a teamwork manner to deliver health benefits."

She added: "Although only limited

information was available on how well individual compounds will be usable by the human body after ingestion, the biochemical composition of rice bran merits further investigation for nutritional therapies and medical food applications."



**Eggs can significantly increase growth in young children**

Science Daily June 7, 2017

Eggs significantly increased

growth and reduced stunting by 47 percent in young children, finds a new study from a leading expert on child nutrition at the Brown School at Washington University in St. Louis. This was a much greater effect than had been shown in previous studies.

"Eggs can be affordable and easily accessible," said Lora Iannotti, lead author of the study. "They are also a good source of nutrients for growth and development in young children," she said. "Eggs have the potential to contribute to reduced growth stunting around the world."

The study, "Eggs in Complementary Feeding and Growth," was published online June 6 in the journal *Pediatrics*. Iannotti and her co-authors conducted a randomized, controlled trial in Ecuador in 2015. Children ages 6-9 months were randomly assigned to be given one egg per day for 6 months, versus a control group, which did not receive eggs. Eggs were shown to increase standardized length-for-age score and weight-for-age score.

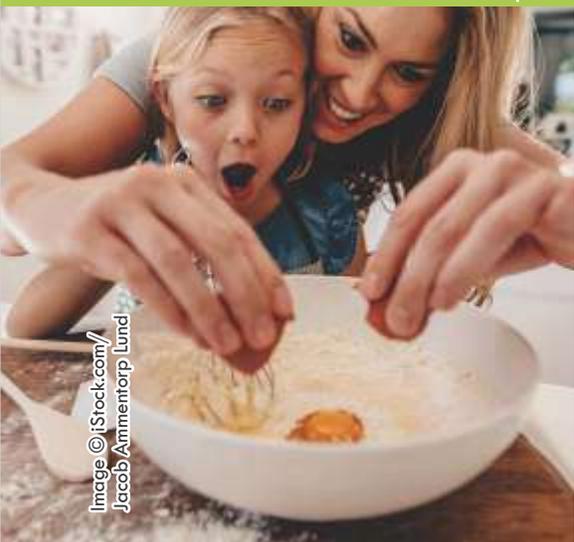


Image © iStock.com/  
Jacob Ammentorp Lund

Models indicated a reduced prevalence of stunting by 47 percent and underweight by 74 percent. Children in the treatment group had higher dietary intakes of eggs and reduced intake of sugar-sweetened foods compared to control.

"We were surprised by just how effective this intervention proved to be," Iannotti said. "The size of the effect was 0.63 compared to the 0.39 global average." Eggs are a complete food, safely packaged and arguably more accessible in resource-poor populations than other complementary foods, specifically fortified foods, she said.

"Our study carefully monitored allergic reactions to eggs, yet no incidents were observed or reported by caregivers during the weekly home visits," Iannotti said. "Eggs seem to be a viable and recommended source of nutrition for children in developing countries."

### Using enticing food labelling to make vegetables more appealing

Science Daily June 12, 2017

Does labelling carrots as "twisted citrus-glazed carrots" or green beans as "sweet sizzling green beans and crispy shallots" make them more enticing and increase vegetable consumption?

Bradley P. Turnwald, M.S., and co-authors from Stanford University in California, tested whether using indulgent descriptive words and phrases typically used to describe less healthy foods would increase vegetable consumption because some perceive healthier foods as less tasty, according to a research letter published by JAMA Internal Medicine.

The study was conducted in a large university cafeteria and data were collected each weekday for the 2016 autumn academic quarter. Each day, one vegetable was labelled in 1 of 4 ways: basic (e.g., beets, green beans or carrots); healthy restrictive (e.g., "lighter-choice beets with no added sugar," "light 'n' low-carb green beans and shallots" or "carrots with sugar-free citrus dressing"); healthy positive (e.g., "high-antioxidant beets," "healthy energy-boosting green beans and shallots" or "smart-choice vitamin C citrus carrots"); or indulgent (e.g., "dynamite chili and tangy lime-seasoned beets," "sweet sizzling green beans and crispy shallots" or "twisted citrus-glazed carrots").

Although the labelling changed, there were no changes in how the vegetables were prepared or served. Research assistants discretely recorded the number of diners who selected the vegetable and weighed the mass of vegetable taken from the serving bowl. During the study, 8,279 of 27,933 diners selected the vegetable.

Indulgent labelling of vegetables resulted in 25 percent more people selecting the vegetable compared with basic labelling, 41 percent more people than the healthy restrictive labelling and 35 percent more

people than the healthy positive labelling, according to the results. Indulgent labelling of vegetables also resulted in a 23 percent increase in the mass of vegetables consumed compared with basic labelling and a 33 percent increase in the mass of vegetables consumed compared with the healthy restrictive labelling. There was a 16 percent non-significant increase compared with the healthy positive labelling.

The authors note they were unable to measure how much food was eaten individually by cafeteria patrons, although people generally eat 92 percent of self-served food. "Further research should assess how well the effects generalize to other settings and explore the potential of indulgent labelling to help alleviate the pervasive cultural mindset that healthy foods are not tasty," the article concludes.



Image © iStock.com/torwai

# FOOD SCIENCE & INDUSTRY NEWS

## Impact of eBeam processing on raw milk

IFT Weekly June 14, 2017

Despite containing relatively high numbers of microorganisms, including pathogens, the consumption of raw milk is on the rise in the United States.

A study published in the *Journal of Food Science* explores the effects of electron beam processing on the nutrient profile and sensory attributes of raw milk. Electron beam (eBeam) processing is a non-thermal pasteurization food processing technology.

The researchers exposed raw milk samples to eBeam doses of 1 and 2 kGy, since previous studies had shown that 2 kGy is suitable for raw milk pasteurization. The untreated and eBeam-treated raw milk samples were analyzed to detect changes in lactose, vitamin B2, vitamin B12, and calcium concentrations. They also investigated the possible breakdown of casein and whey proteins and lipid oxidation along with the formation of volatile aroma compounds.

The researchers found that even though vitamin B2 showed a 31.6% decrease in concentration, the B2 content in eBeam-pasteurized raw milk met all the U.S. Dept. of Agriculture (USDA) nutritional guidelines. Even though there were no indications of lipid oxidation after the 2-kGy eBeam treatment, there was lipid oxidation (58%) after seven days of refrigerated storage. However, based on the GC-

olfactory analysis, the lipid oxidation did not necessarily result in the development of a wide variety of off-odours.

The researchers concluded that the results “suggest that eBeam pasteurization of raw milk does not adversely affect nutrient levels.” While some off-odours were detected, the researchers believe “it would be worthwhile to evaluate whether incremental eBeam dosing would further reduce the chances of any off-odours occurring.”

## Beetroot, mango and pumpkin trump tomatoes in ketchup

By Niamh Michail 13-Jun-2017 - Food Navigator

**Traditional tomatoes are being shunned by manufacturers looking to make the classic condiment appeal to more sophisticated palates with mangoes, beetroot or pumpkin.**

“Given the rising competition from other table sauces, tomato ketchup manufacturers face the ongoing challenge of how to find ways to maintain consumer interest and to widen their products’ appeal beyond children and teens, reaching out to older, more sophisticated age groups,” says Mintel food and drink analyst Katya Witham.

Over the past year (between April 2016 and March 2017), almost one-fifth of new ketchup launches in Germany were focussed on ‘alternative’

vegetables, offering different flavours to tomato, including Georg Thalhammer’s Mild Pumpkin Ketchup and Herr Edelmann’s Smokey Orange or Organic Mango.

“Their flavour profiles are centred on naturally sweet, flavourful vegetables, such as pumpkin, carrot and beetroot, but also on fruits, including mangoes and plums,” writes Witham in an online blog post.

“Besides attention-grabbing flavours, such innovations can help promote more natural and healthier connotations in ketchup, focusing consumer attention on the inherent goodness of fruit and vegetables.” The trend is also picking up pace in the UK where British company The Foraging Fox manufactures beetroot-based ketchup, available in three flavours: original, smoked and hot.

According to the company’s founder, Frankie Fox, the healthy, clean label ingredient list is a winner.

Fox told our sister site, FoodNavigator-USA: “Beets and apples are naturally sweet so you don’t have to add much sugar... Apple brings out the natural sweetness of the beetroot and takes off the earthy edge to it.

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and allows consumers to stay active,” said Dr Daniel Martínez Puig, R&D human health director at Bioiberica. “Consumers of all ages are increasingly concerned with maintaining an active lifestyle as a way to keep healthy. Healthy agers, sportspeople, women, seniors... all of them want to keep an active way of life.”

Now we know that body fat also harms joints. With obesity reaching epidemic proportions globally, we understand that there will be a specific need for solutions to those health problems derived from excess body fat, such as deterioration of joint health.”

### Marketing approach

Despite the predictions of a buoyant market, the appeal of products that target bone and joint health may be somewhat limited. In the case of overweight consumers, addressing the issue with a weight loss ingredient or supplement might be more attractive in terms of seeing noticeable long-term gains. For manufacturers and suppliers, marketing products to target the skeletal structure has taken on a more scientific direction, communicating the proven benefits behind the ingredient.

“Consumers want to be convinced with scientific evidence, as they do not always physically see or feel the direct effects of taking a health ingredient in the short term,” said Dr De Clerck. “So we are seeing a growing willingness among consumers to try innovative products and ingredients, provided the benefits are proven – and we market to that by working hard on the science behind and communicating it.”

“We also give our customers different innovative ideas as to how they can integrate collagen peptides in different delivery formats. Joint and bone health products do not always need to be delivered in the form of a pill supplement, they can also be integrated in foods and drinks formulated to fit consumers’ lifestyles and to appeal to different demographics, such as ready-to-drink (RTD) in an on-the-go format or nutritional bar.”

Oliver Wolf, head of B2B marketing (global) at Gelita agreed commenting that with today’s

## Bones of contention: Joint-up thinking key to market gains

By Will Chu 30-May-2017 - Nutralingredients

Post-menopausal women, senior citizens both male and female. Those in the twilight of life have traditionally made up the bulk of the market for bone and joint supplements and ingredients.

The World Health Organization (WHO) already identifies bone health in Europe as an issue of growing concern. Figures identify around 22 million women and 5.5 million men in the European Union with osteoporosis. The economic burden of incident and previous fragility fractures is around €37 billion with costs expected to increase by 25% in 2025.

Joint degeneration (osteoarthritis) also falls into this sector affecting over 40 million people across Europe, according to WHO statistics. Osteoarthritis is mainly age-related but the condition can also advance due to physical activity that creates wear and tear on the joints. For example in people engaging in sports activities or work in a physically demanding profession. The demographics are noticeably shifting. Nutrients and dietary supplements like collagen proteins, gelatine, and omega-3 fish oils are attracting a younger audience eager to address the physical demands of their lifestyles.

“There is a big opportunity for products that support joint health

“The lines between different sports nutrition user groups are blurring,” added Dr Elke De Clerck, product and business development manager at Rousselot. “Think, for example of core, casual and lifestyle users. Along with this blurring of boundaries, consumers are looking for more than building muscles or engaging in competitive sports: they want to stay active and fit and, most importantly, to maintain a healthy lifestyle.”

Along with Bioiberica, an ingredients supplier specialising in osteoarthritis and joint health, and Rousselot, a producer of natural gelatin & peptan collagen peptides, other players active within this sector include Gelita, Evolva, Nexira and Orkla Health.

The overweight audience However, fit and active people are not the only ones in need of bone and joint support. Those who are overweight or obese are also at an increased risk of osteoarthritis. With overweight affecting 30-70% and obesity, affecting 10-30% of adults, further gains on the global bone and joint health market’s \$1.6 billion (€1.4 billion) valuation are expected. Recent forecasts predict it will exceed \$9 billion (€8 billion) by the end of this year.

“Obesity is a demonstrated risk factor for osteoarthritis but it has traditionally been thought to be just a question of mechanical overload,” said Dr Martínez Puig. “However, this does not explain why, for example, hand osteoarthritis is more common in obese people.

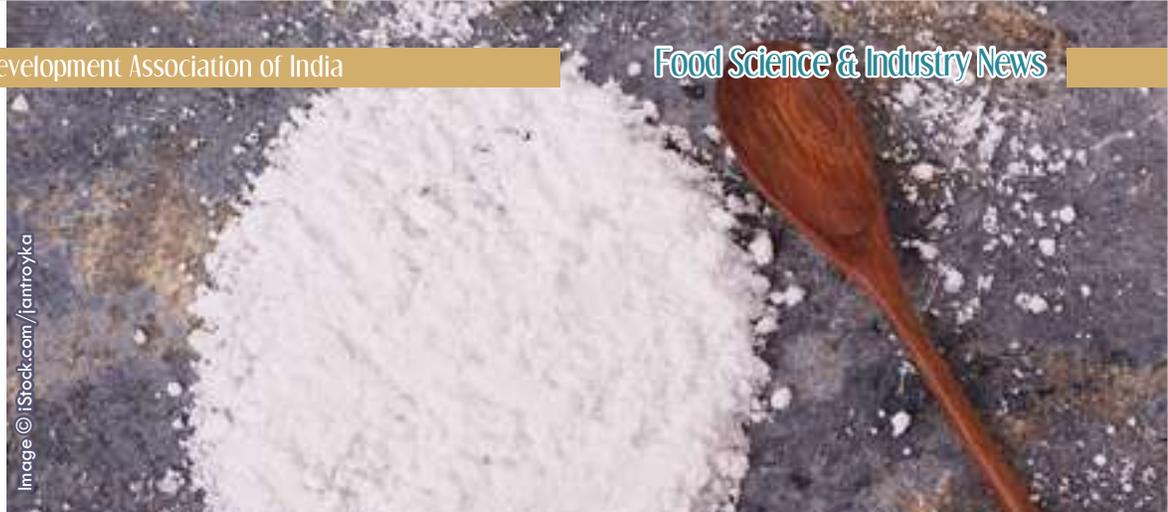
consumers being better educated about the link between nutrition and health; they are also keen to understand how bone and joint health products work. “This means higher levels of interest in products with the greatest amount of scientific research and evidence to support them – such as collagen peptides. Most health concepts using bone/joint-specific ingredients focus on prevention. As such, consumers cannot immediately feel their efficacy. This is especially true for bone health products that target consumers who want to prevent osteoporosis and stay mobile as they age.

#### Future direction

Looking towards the future, ingredient suppliers believe the sector is ripe for growth. With sports nutrition a burgeoning area, the range of ‘targets’ are forever extending to now include athletes and healthy agers. At the other end of the scale, overweight individuals are also forming a significant audience looking for solutions that can address multiple mobility needs.

With scientific evidence a factor in customer purchasing decisions, could combining ingredients be the way forward in obtaining a range of bone and joint benefits from proven sources? “In certain cases, combinations of ingredients can enhance the desired benefits; however, it’s key that the efficacy of these ingredients has been validated in high quality scientific studies,” said Wolf. “The synergistic effects of combining collagen peptides and other nutrients like calcium and vitamin C, can be interesting to look into,” added Dr De Clerck. “For example, the anti-inflammatory synergistic effect between collagen peptides and ingredients such as boswellia and turmeric/curcumin.”

Image © iStock.com/jantroyka



## Fat-reducing starch offers ‘no taste compromise’

By Noli Dinkovski 29-May-2017 - Food Manufacture

A tapioca-based clean-label starch is being heralded as the ideal ingredient to reduce fat in food, without compromising on taste characteristics. Suitable as a substitute ingredient for most fats, including butter, oil, cream and milk solids, delyte 9 can be used to co-texturise in its own right, thanks to its innate stability, maker Ulrick & Short claimed.

A multitude of foodstuffs can benefit from reduced fat levels through the specification of delyte 9, including sauces, soups, ready meals and sweet applications, the company added.

The gluten-free ingredient is particularly valued in sauces, as the starch binds water and helps to trap fat content within the sauce without altering its viscosity, said Ulrick & Short.

The secret of fat replacement  
The secret of fat replacement lies in achieving a balance between reducing fat content while maintaining the levels of mouthfeel, texture and taste. Too little fat, and dairy products in particular will start to lose flavour, body and creaminess.

According to Ulrick & Short, delyte 9 is easy to use and can be applied

in ratios as small as 1–2% to add body and creaminess to food products that require a luxury touch.

## Functional foods gain traction as alternative to OTC digestive remedies

By Elizabeth Crawford 07-Jun-2017 - NutraIngredients USA

At the crossroad of Americans’ increasingly sedentary work- and lifestyles and their demand for decadent food is a growing need for digestive remedies and an opportunity for supplements and fortified foods to edge out over-the-counter treatments that come with unwanted side effects, according to research from Euromonitor.

Market research from Mintel confirms this trend with the company’s health and wellness analyst Marissa Gilbert noting in a recently released report that the growth of the digestive health market in 2016 softened slightly compared to prior years even though the need for digestive health treatments did not change. Rather, she said, consumers are becoming more interested “in improving overall digestive health with proactive treatments such as probiotics.”

Image © iStock.com/Natali\_Mis



To help meet this consumer demand, manufacturers are launching a wide range of products aimed at digestive health, including fermented and probiotic-enhanced options. Included among the diverse options launching in the first half of this year are: Ona's Functional Fuel Plant Protein Bars with Probiotics –

Healthy treat company Ona expanded its portfolio into the functional fuel space last month with the launch of its Functional Fuel Plant Protein Bars with Probiotics, which blend sunflower and pumpkin protein with nuts, seeds and several adaptogens to help ease stress, promote muscle recovery, provide “clean energy” and facilitate relaxation. It added 1 billion CFU of GanadenBC30 probiotics to each bar because “gut health is so important for overall well-being,” and to “make it easier for people to maintain a healthy lifestyle and balanced diet on the go,” according to the company.

Lifeway's BioKefir shots – This summer, Lifeway Foods will introduce a trio of fat-free, high-potency probiotic kefir shots “to power up digestion, heart health and immunity,” according to the company. The shots contain 12 probiotic cultures and offer a 99% lactose-free alternative to many dairy-based delivery platforms for probiotics.

Amazing Grass' Elixers and Green Superfood Effervescent lines – Beginning in June, Amazing Grass will ship two new product lines that combine adaptogenic herbs and functional ingredients with fermented greens to support wellness needs, including gut health. The company explains that fermenting the grasses in the beverages aids with “pre-digestion, while offering superior bioavailability.” The line of three products – Beauty, Brain and Belly – comes as powders and effervescent tabs that can be blended with juice,

water or milk.

Stoneyfield Organic's probiotic enriched YoBaby yogurts – On the premise that “gut health is the foundation for overall good health as babies grow,” yogurt maker Stonyfield Organic began adding probiotic BB-12 to its YoBaby line in February. The company explained that it added the probiotic after conducting a consumer survey that found parents occasionally add probiotics to their children's diets to help ease upset stomachs, fend off colds and flu and counter the negative side effects of antibiotics.

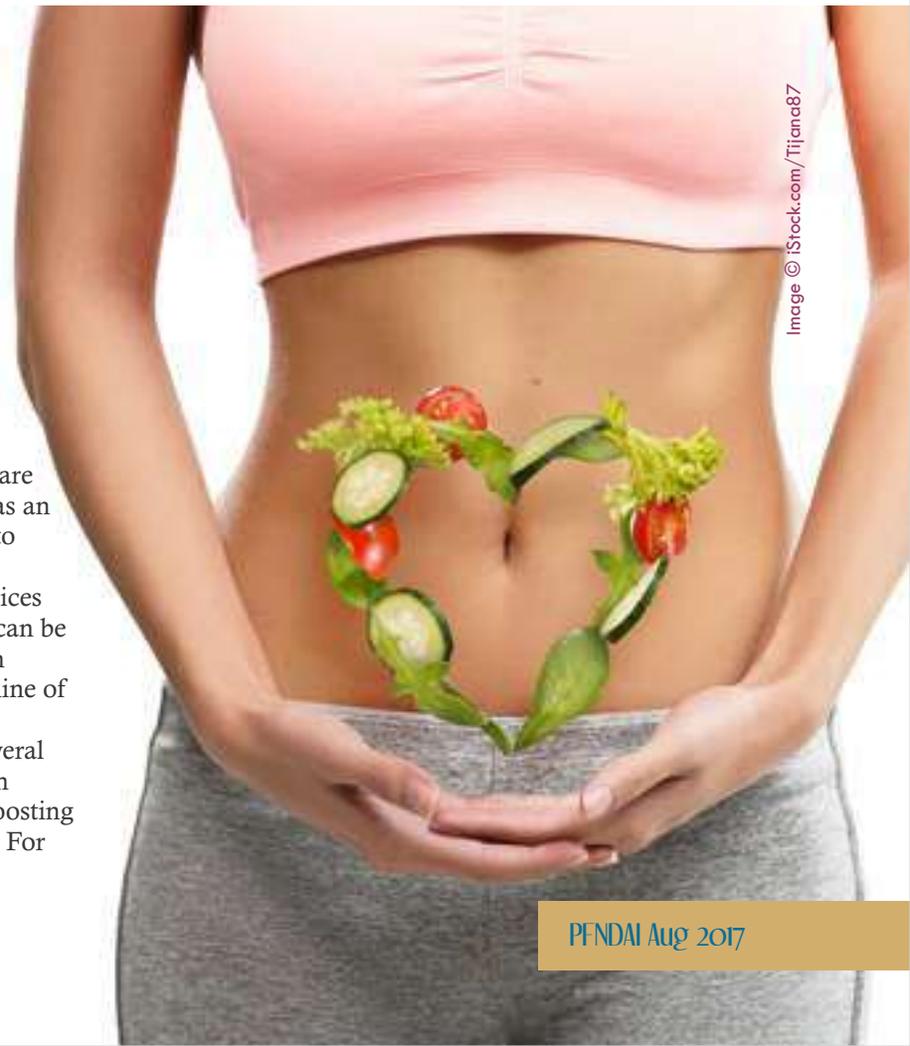
Despite this awareness of probiotic benefits, less than a quarter of parents included probiotics in their children's diet daily, the survey found. By adding probiotics to yogurt the company hopes to make daily consumption easier.

Bonafide Provision's Drinkable Veggies line – The frozen, organic bone broth company expanded into the refrigerated section earlier this year with the launch of its ready-to-drink, USDA Organic Drinkable Veggies line, which are positioned as an alternative to traditional vegetable juices that it says can be packed with MSG. The line of five blends includes several options with digestion-boosting ingredients. For

example, Revive, includes fennel to aid digestion, and Renew includes burdock root to help with detoxification and digestion, according to the company. The line also includes Revitalize, which has lemon and mint to aid digestion.

KeVita's Apple Cider Vinegar Tonics – While technically released before the start of the new year, KeVita positioned its Apple Cider Vinegar Tonics as a slightly sweetened, less acidic alternative to the “somewhat disgusting” trend of drinking apple cider vinegar to help absorb food and aid digestion. The Tonics combine apple cider vinegar with water kefir culture for an extra boost of digestive- and immune health- supporting probiotics, according to the company.

Sweetened with stevia and apple juice, the line includes six flavours: Turmeric Ginger, Chili Ginger Lime, Cinnamon, Meyer Lemon, Ginseng Mandarin and Elderberry.



# REGULATORY NEWS

## PACE Food Labelling Encourages Students to Make Healthier Choices

12 Jun 2017

According to a study published in the *Journal of Nutrition Education and Behavior*, encouraging fruit vegetable and water intake led to smarter nutritional choices among students.

As students transition from high school to college, they enter a critical period for weight gain. Although eating in a buffet-style dining hall offers freedom and flexibility in food choice, many students cite the abundance of food available as a cause of weight gain.

As most college students' diets are low in fruits and vegetables and high in calories, sugar, fat and sodium, researchers from the University of Toronto and Memorial University of Newfoundland created a cross-sectional study to examine whether messaging encouraging fruit, vegetable and water intake could influence the habits of university students.

"Our labelling focused on beverages and fruits and vegetables, may have been useful to decrease students' consumption of sugar-sweetened beverages and increase consumption of water, fruits, and vegetables," says lead author Mary Scourboutakos, Ph.D., a post-doctoral researcher at the University of Toronto. The study was conducted in a dining centre on the University of

Toronto campus that offered a wide variety of entrees and soups, featured a salad and fruit bar, and had sides, desserts and 19 beverage options available daily. The first part of the intervention encouraged students to choose water as their beverage by using physical activity calorie equivalent (PACE) labelling, which illustrated the minutes of jogging required to burn the calories in the different beverages offered. In the second part of the intervention, posters were hung in strategically selected locations to promote fruit and vegetable consumption. The posters were placed in attention-grabbing places to maximize exposure to the intervention.

Data were collected in-person on six events before, and six events after the intervention; inventory data were used as a secondary source. Between 368 and 510 students visited the dining hall for each dinner when data were collected, filling 8,570 beverages cups and taking 3,668 and 954 trips to the salad bar and fruit bar, respectively. After the interventions, sugar-sweetened beverage consumption was reduced, and fruit and vegetable intake was increased. "We found a significant increase in students drinking water before versus after the intervention, with 43% choosing water before and 54% doing so after," Scourboutakos says. "Likewise, trips to the fruit bar increased by

six percent and trips to the salad bar increased by 12%."

These results from a university dining hall setting are promising, particularly regarding the PACE labelling. Interventions to promote increased fruit, vegetable and water consumption should be repeated in different settings to determine if similarly successful results can be attained.

## Food poisoning duration: How long do symptoms last?

Medical News Today 27 June 2017 by Jennifer Huizen

Food poisoning, sometimes called food-borne illness, is a common but preventable condition caused by eating foods contaminated with harmful pathogens.

According to the Centers for Disease Control and Prevention (CDC), every year, 1 in 6 Americans experience food poisoning. The most common symptoms are nausea, vomiting, abdominal cramping, and diarrhea. Many cases of food poisoning are mild and get better on their own. Severe or chronic cases, however, may require medical intervention.



Image © iStock.com/chombosen

Image © iStock.com/LittleBee80



### What is food poisoning?

Food poisoning may affect 1 in 6 Americans every year due to contaminated food containing pathogens. Food poisoning is caused by eating food contaminated with pathogens, which are infectious bacteria, parasites, or viruses. Most food-borne illnesses are gastrointestinal, meaning they cause symptoms in the digestive tract. Despite major advances in food production and safety, food poisoning is still very common. Food contamination can occur during production, processing, transportation, and storage. Contamination also happens during preparation and cooking.

A 2013 study found that 51 percent of food poisoning cases were caused by plant products and 48 percent were caused by animal products, including beef, pork, poultry, and seafood. This data was pulled from a 10-year period from 1998-2008.

A CDC study found that, out of the 9 million annual cases of food poisoning in the United States (U.S.), roughly 56,000 required hospitalization and 1,350 led to death.

### Common causes and duration

Common causes of food poisoning include:

#### Norovirus

Norovirus is a contagious virus found in food and water contaminated with feces. It can spread through contact with infected individuals or surfaces. Noroviruses are responsible for 58 percent of cases of food-borne

illness in the U.S. In a CDC study, norovirus accounted for 26 percent of cases that required hospitalization. Most outbreaks occur in food service settings, such as restaurants, where infected individuals have handled raw foods. Norovirus does not have a cure. It is treated by a person resting, being hydrated, and taking vitamin and mineral supplements. Most symptoms of norovirus infections begin within 12 to 48 hours of exposure. They usually stop after a few days. Common norovirus symptoms include:

- ⊗ nausea
- ⊗ vomiting
- ⊗ diarrhea, usually constant and severe
- ⊗ stomach pain
- ⊗ abdominal cramping
- ⊗ fever
- ⊗ chills
- ⊗ headache
- ⊗ exhaustion
- ⊗ body aches or muscle soreness

In extreme cases, norovirus can cause severe dehydration. Without treatment, severe dehydration can lead to death. Signs of severe dehydration include:

- ⊗ dizziness, especially when standing up
- ⊗ feeling faint or weak
- ⊗ extreme fatigue
- ⊗ dry mouth and throat
- ⊗ decreased urination
- ⊗ muscle pain or weakness
- ⊗ dry, sensitive, or painful eyes
- ⊗ unusual sleepiness, fussiness, and reduced tears in children

#### Non-typhoidal Salmonella

Salmonella spreads through contaminated food and water, and causes infectious diarrhea. Salmonella species are a leading cause of bacterial diarrhea worldwide, causing 94 million cases and around 115,000 deaths every year. According to a 2011 CDC study, non-typhoidal Salmonella is responsible for 11 percent of American food poisoning cases and 35 percent of food illness hospitalizations annually.

Salmonella spreads through food and water contaminated with fecal matter. Contact with infected individuals or animals can also cause infection.

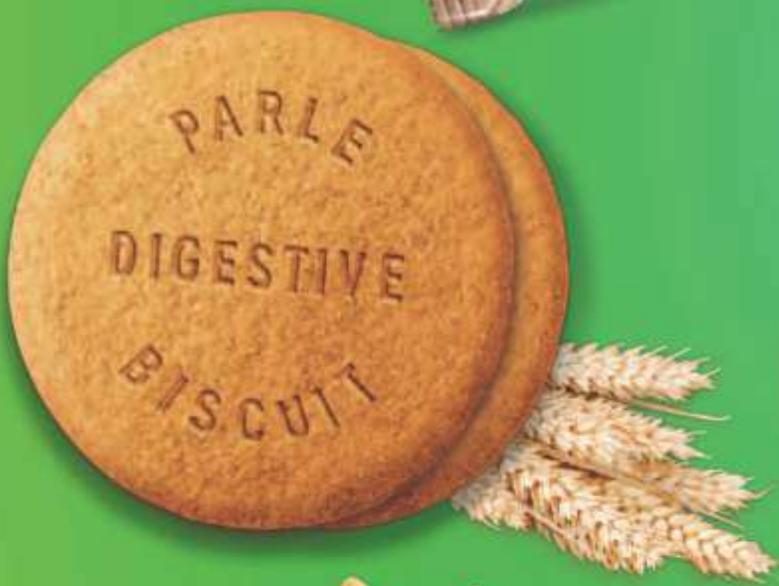
Salmonella infections most commonly cause infectious diarrhea (gastroenteritis). Other common symptoms include fever and abdominal pain. Symptoms can start at any point within 6 to 72 hours of exposure but commonly occur within 12 to 36 hours. Diagnosis is usually made using a fecal sample. In many cases, hydration and rest are the only recommended treatment. Most infections get better within 4 to 7 days. Severe cases or high-risk individuals, such as children, older people, and people with weakened immune systems, may be given antimicrobial medications.

#### Clostridium perfringens

Clostridium perfringens is a type of bacteria that infects the intestines of humans and animals. Illness occurs if a large amount of the bacteria is consumed. It cannot be spread through contact with an infected person. Most commonly found in raw meat and poultry products, Clostridium perfringens spreads in pre-cooked foods that have been kept warm for serving. According to the CDC study, Clostridium perfringens is responsible for 10 percent of food poisoning cases in the U.S.

Infection can occur at any point between 6 to 24 hours after exposure but usually happens within 8 to 12 hours. Symptoms include diarrhea and abdominal pain. Most people do not experience fever or vomiting. Symptoms often begin suddenly and stop within 24 hours. Most cases are treated with rest and hydration. For severe cases, electrolyte replacement and intravenous fluids may be necessary to avoid severe dehydration.

# Celebrating Goodness



### Campylobacter species

Campylobacter species are the leading global cause of bacterial gastroenteritis, or inflammation of the stomach and small intestines. They are found in the intestines of warm-blooded animals, especially cattle and poultry, and spread through the consumption of meat and poultry products. They can also spread through direct contact with infected animals. According to a CDC study, Campylobacter species are responsible for 9 percent of U.S. cases of food poisoning and 15 percent of hospitalizations annually.

Infection can occur 1 to 10 days after exposure. Most infections are mild and improve on their own within 3 to 6 days. The most common symptoms include:

- ⊗ diarrhea
- ⊗ nausea
- ⊗ vomiting
- ⊗ fever

L abdominal pain or cramping

- ⊗ headache
- ⊗ fatigue
- ⊗ dehydration

Treatment includes hydration and rest. Children, older adults, and people with a weakened immune system may require medical attention.

### Parasites

Undercooked meat and fish that has been contaminated with feces may transmit parasites.

There are many parasites that can be transmitted through contaminated food. The CDC report that the most common foodborne parasites in the U.S. are:

- ⊗ protozoa, such as Cryptosporidium species and Toxoplasma gondii
- ⊗ roundworms, such as Trichinella species
- ⊗ tapeworms, such as Diphylobothrium

T. gondii is estimated to be the cause of 8 percent of hospitalizations and 24 percent of deaths related to food poisoning in the U.S. These parasites can be

transmitted through undercooked meat and fish and raw vegetables that have been contaminated with feces. Symptoms vary depending on the parasite. Many cause gastrointestinal symptoms, while some can also lead to a cough, skin lesions, and nerve problems.

### Listeria monocytogenes

Although they are rarer than other forms of foodborne illness, Listeria monocytogenes infections are often serious and require hospitalization. According to the CDC, around 1,600 people get Listeria infections each year, and 1 in 5 dies from the condition. Listeria most commonly affects newborns, pregnant women, older adults, and those with immune system conditions. Initial signs of infection include diarrhea, similar to most foodborne illnesses. Symptoms normally occur within 1 to 4 hours of consuming contaminated food. If Listeria spreads, it can cause an invasive infection. Symptoms of an invasive infection include:

- ⊗ fever
- ⊗ muscle aches and pain
- ⊗ stiff muscles or joints, particularly in the neck
- ⊗ loss of balance
- ⊗ confusion
- ⊗ convulsions

In pregnant women, symptoms may include:

- ⊗ fever
- ⊗ flu-like symptoms

If these symptoms occur during pregnancy, seek immediate medical attention. The bacteria can spread to the fetus through the placenta, causing stillbirth. Listeria is diagnosed using fecal samples and treated using antibiotics.

### Escherichia coli (E. coli)

E. coli bacteria live naturally in the intestines of most healthy humans. While most types of E. coli are harmless, some species cause infections. These bacteria spread through fecal matter in food or water, as well as through direct contact with infected individuals.

E.coli species can cause a wide variety of symptoms. These include:

- ⊗ diarrhea
- ⊗ bloody diarrhea
- ⊗ abdominal cramping
- ⊗ low-grade fever
- ⊗ dehydration
- ⊗ urinary tract infection (UTI)
- ⊗ respiratory infection

Most symptoms appear within 3 to 4 days of infection and improve after 5 to 7 days. The recommended treatment is usually hydration and rest. However, a few species of E. coli can cause bloody diarrhea and severe dehydration, which require hospitalization or more immediate medical treatment.

### Ways to prevent food poisoning

Many cases of food poisoning are preventable. Good hygiene and cooking foods thoroughly are the best and easiest ways to avoid food poisoning. Food poisoning can be prevented if some rules are followed, such as reheating food to the correct temperature and avoiding cross-contaminating food. Safe minimum cooking temperatures include:

- ✓ ground meats: 160°F
- ✓ fresh beef, veal, and lamb: 145°F (let stand 3 minutes)
- ✓ poultry: 165°F
- ✓ pork and ham: 145°F (let stand 3 minutes)
- ✓ egg dishes: 160°F, cook eggs until whites are firm
- ✓ leftover dishes and casseroles: 165°F
- ✓ fish: 145°F or flesh can come apart with a fork
- ✓ shellfish: cook until shells open on their own

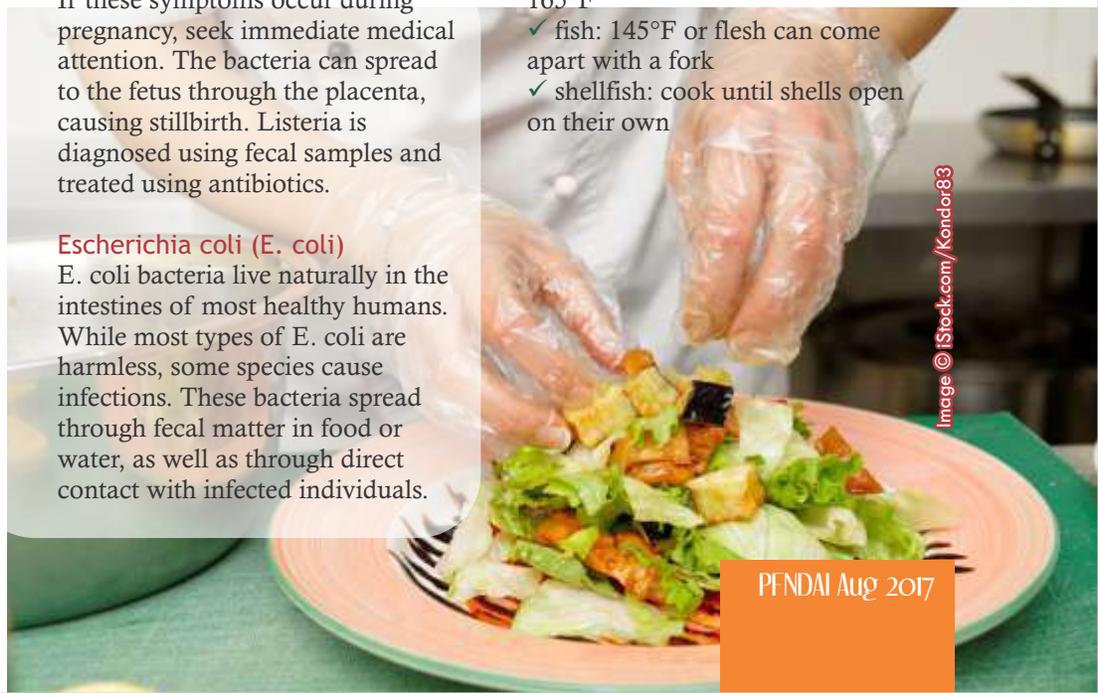


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Some ways to prevent food poisoning include:

- ✓ frequent hand-washing
- ✓ refrigerating perishable foods within 1 hour and cooked foods within 2 hours
- ✓ reheating foods to recommended cooking temperatures
- ✓ avoiding touching your face or mouth
- ✓ washing fruits and vegetables before cooking and consumption
- ✓ avoiding cross contamination of meats, poultry, and dairy products with fruits and vegetables
- ✓ keeping diapers, dog bags, and cat litter away from food preparation areas
- ✓ avoiding exposure to small, uncirculated bodies of water, such as small lakes, ponds, and children's play pools
- ✓ washing hands frequently when around farm and zoo animals

Take precautions when eating raw foods and foods that have been prepared commercially, as well as foods that have been left out of the refrigerator, sitting on ice, under heat lamps, or on heating plates. If you have symptoms of food poisoning or suspect exposure to foodborne illnesses, avoid contact with others or preparing food for others.

like fruits, vegetables, tea, and cocoa. And consumers are showing an increased interest in learning more.

#### But can there be too much of a good thing?

John Erdman, a professor emeritus in the Department of Food Science and Human Nutrition at the University of Illinois, and his lab have studied bioactives and their health benefits for years. Now, Erdman and a team of other scientists want to see recommended maximum intake levels established by public health officials in order to help educate people about what they should be consuming.

Such guidelines are needed whether bioactive nutrients are consumed from fruits or vegetables as part of a healthy diet, or from supplements derived from those foods. In a series of recently published papers, including a study in the journal *Regulatory Toxicology and Pharmacology*, Erdman and colleagues report that the key to establishing appropriate levels is assessing bioactives' safety and potential toxicity: In other words, how much is too much before there are adverse side effects?

"There's been a huge amount of

interest in bioactives in foods, not only in the College of ACES at Illinois, but around the world, as they relate to cancer, heart disease, diabetes, and longevity. Often times we'll use an animal model or cell culture model to test a bioactive to see if it has efficacy. I don't think very many people think about the safety side, though," he adds, pointing out that even life-essential things like water or oxygen, can be toxic if too much is taken in.

Tolerable upper intake levels (ULs) for essential nutrients in the United States were set after a review period between 1994 and 2004. But bioactives, as supplements, remain unregulated. Unlike vitamins, such as vitamin C, or essential nutrients like iron or zinc, bioactives are non-essential compounds in food. But they could influence health if consumed by the appropriate population in the right amounts, Erdman says.

So, if bioactives promote health, and scientists can demonstrate that, then what criteria must be met to have recommendations like Recommended Dietary Allowances (RDAs) or Dietary Reference Intakes (DRIs) set for bioactives? The answer is two-pronged, Erdman says. It's about determining efficacy (how well it works and how much is needed) and safety (at what level might the compound produce adverse effects), a risk-benefit curve.

"If we're going to make recommendations for something like resveratrol, a compound in red wine, as an example, or lycopene, the red pigment in tomatoes, we should have an idea about how much is really needed for efficacy. How often do you need to consume it? And are supplements of resveratrol or lycopene absorbed by humans and stable in the bottles? If you just go to a health foods store for supplements, you don't really know what you're getting," he says.

### Too much of a good thing: Developing safe level guidelines for bioactives

Science Daily June 1, 2017

The good news is out that wine and dark chocolate may be good for your health. That's because of substances known as bioactives that are contained in those foods.

Research has shown the potential health benefits of bioactive nutrients -- those compounds found in foods

Image © iStock.com/  
AnnaPustymnikova

Erdman and his lab have been interested in bioactives in foods like soy, tomato, and broccoli for some time, particularly for reducing the risk of cancer. They have focused in on carotenoids, which are found in the pigments in foods such as tomato and carrots. Most recently, though, Erdman has focused his research on lutein. Lutein is also a carotenoid primarily found in green leafy vegetables, but also as the pigment of egg yolks and corn. "There's been a lot of research showing that lutein is very important in eye health, Erdman says.

Demonstrating the health benefits in these substances and determining the safety of the substances when consumed can be difficult because a lot of data from human clinical trials are required. "To establish ULs, ideally we would rely on cases where chronic intake of a compound caused an adverse effect. But usually we don't have that kind of data," Erdman says.

"For vitamin A, for example, there is an UL mostly that's based on cases where someone took a larger amount of vitamin A and then had some liver problems. Or magnesium where the upper level is based on severe diarrhea, which is not life threatening, but an adverse effect. We can use the same approach for bioactives, but what it requires is human trials. There are many challenges, because they are expensive to run and who is going to pay for them?"

The paper includes case studies in which two bioactive nutrients as supplements were reviewed for risk and benefit; lutein and ECGC, a green tea extract. For lutein, studies showed efficacy and that the only adverse event that's been shown is non-life threatening yellowing of skin. As far as the ECGC study, Erdman says it serves as a very good warning. "We've known for a long time that drinking tea is very

helpful and has good benefits in regards to cardiovascular health and, some studies show, blood pressure reduction. But if you pull out one compound from tea and consume it as a dietary supplement at very high levels it can be toxic, and this was shown for the liver in some persons consuming supplements high in ECGC."

Erdman adds, "You don't want people thinking they are improving their health by consuming large amounts of the material and are actually causing harm. In order to make recommendations you have to know what the upper safe limit of the material is. In many cases that's not known very well. There has been much less work done with bioactives."

Until dietary recommendations are set for bioactives, Erdman says that he and the group of scientists he works with will continue carrying out research and presenting their information at meetings and symposiums. "We all would like to see some guidelines put in place, and recognition that there are some very important bioactives in foods. Let's recognize them and under what conditions they should be used, and then let the public know.

Most of them come from plant foods -- fruits or vegetables -- and some come from grains. As nutritionists, we want people to eat more fruits and vegetables and whole grains. Hopefully we can give them another reason, and that is because there are bioactives in these foods, not just vitamins. For people who ignore fruits and vegetables and take a vitamin pill, they are not getting these bioactives." "Bioactive nutrients -- Time for tolerable upper intake levels to address safety," is published in *Regulatory Toxicology and Pharmacology*.

## A tale of two evaporated cane juice lawsuits:

By Elaine Watson 01-Jun-2017 - Food Navigator USA

Very different outcomes in two near-identical lawsuits over evaporated cane juice labelling serve as a reminder that when it comes to food labelling, your website is every bit as important as your packaging label from a legal perspective.

They also serve as a reminder that regardless of its non-binding legal status, FDA guidance continues to be used as a "roadmap for class action lawsuits," says one legal expert.

In the first case – *Swearingen v Late July Snacks\** - judge Edward Chen ruled that the plaintiffs had made a case that a reasonable consumer might be misled by the term 'evaporated cane juice (ECJ),' which he noted, citing 2016 FDA finalized guidance, might more accurately be described as 'sugar.' The plaintiffs, he added, "believed ECJ was some type of ingredient that was healthier than sugar due to its inclusion of the word 'juice' and its omission of the words 'sugar' or 'syrup.' Moreover, this interpretation is consistent with the FDA's rationale for determining that ECJ is a misleading term."

Image © iStock.com/marhero



Three days earlier, however, Judge Chen dismissed a near identical lawsuit – Swearingen v Healthy Beverage Co\*\* (maker of Steaz teas) over the use of the term evaporated cane juice, as Healthy Beverage Co stated on its website [but not its packaging] that “cane juice is natural sugar,” and the plaintiffs’ counsel acknowledged that the plaintiffs “may have looked at” the website. And as such, they could not be under any illusions that ECJ is, in fact, sugar.

Plaintiffs ‘may have looked at’ the website as well as the food label. Several ECJ-related lawsuits were stayed in 2014 after the FDA said it would take a fresh look at the validity of the term ECJ, but came back in play when the agency issued finalized guidance on the matter in May 2016. The guidance advised manufacturers not to use the term ‘evaporated cane juice’ on labels because it is false and misleading, although defence attorneys were quick to note that FDA guidance – finalized or otherwise – is not legally binding.

In recent months, ECJ lawsuits against companies including Lifeway Foods and Odwalla (Coca-Cola) have been voluntarily dismissed according to court filings, although it is not clear whether they were dropped or privately settled. So what can we take away from the ECJ saga, and the FDA’s interventions via draft guidance/guidance, which many industry stakeholders argue has caused chaos, confusion, and a tsunami of lawsuits?

Justin Prochnow, shareholder at law firm Greenberg Traurig, told FoodNavigator-USA that the

litigation of ECJ claims “has always been interesting because most of the litigation is really the result of what was provided in an FDA draft guidance document, now a final FDA guidance....” He added: “It is crucial to remember that draft or final, FDA Guidances for Industry include non-binding recommendations and do not establish legally enforceable responsibilities. This is made clear at the top of each guidance. Yet class action plaintiff lawyers attempt to use guidance as ‘the law,’ and a roadmap for class action lawsuits. Unfortunately, the system is set up right now so that plaintiff lawyers can bring such actions and force companies to either defend or settle out for some amount to make it go away.

“I think what both of these cases demonstrate is that many of these cases will not survive or survive on limited claims if companies have the wherewithal to stand up and fight them. Also, as shown in the Healthy Beverage Co case, the alleged ‘aggrieved plaintiffs’ in many of these cases haven’t actually looked at the labels closely or don’t actually know what is displayed on the labels. These cases are often hastily put together without a great deal of investigation, getting plaintiffs by advertising online or signing up the babysitter or a neighbour to act as the class plaintiff.”

That being said, he cautioned, “Due to the sheer time, energy, and cost associated with these class actions, whenever the FDA issues a guidance, companies have to be aware that those opinions are going to be taken as ‘the law’ and so at least some consideration has to be

paid to what the FDA has indicated in the guidance and the risks associated with operating contrary to that guidance.”

#### Why all the controversy?

The use of the term ‘evaporated cane juice’ (ECJ) to describe a crystallized sugar derived from sugar cane has prompted scores of lawsuits against firms from Chobani to Trader Joe’s in which plaintiffs argue that manufacturers only use it because it conceals the fact that they are adding sugar to their products. ECJ manufacturers, however, insist that the term ‘evaporated cane juice’ accurately reflects what the product is and clearly distinguishes it from regular white refined sugar (although it does have the same number of calories and counts as sugar in the Nutrition Facts panel).

#### What is the FDA’s position on Evaporated Cane Juice labelling?

In finalized guidance released in May 2016, the FDA said the term ‘evaporated cane juice’ is “false and misleading” and advised manufacturers not to use it on food labels. It also acknowledged that ‘dried cane syrup’ [a term it suggested companies might use in its 2009 draft guidance] is not a great alternative, and has instead advised companies to simply declare ECJ as ‘sugar.’

“We are advising the regulated industry of our view that the term ‘evaporated cane juice’ is not the common or usual name of any type of sweetener and that this ingredient should instead be declared on food labels as ‘sugar,’ preceded by one or more truthful, non-misleading descriptors if the manufacturer so chooses (e.g. ‘cane sugar’).”

# HEALTH BITES

## Can people with type 2 diabetes eat honey?

Medical News Today 28 May 2017 by Lana Barhum

People with diabetes are often told they should not eat sweets and other foods that contain sugar because they may cause a spike in blood sugar levels. So, could honey be a healthful alternative to sugar-filled sweets and snacks?

Blood sugar (glucose) levels are the amounts of sugar found in the blood. Sugar is the body's primary source of energy. Insulin is secreted from the pancreas to maintain blood sugar. The bodies of people with diabetes do not produce enough insulin or use it correctly.

### What are carbohydrates?

Carbohydrates, which are broken down into sugar provide the body with most of its needed energy. Carbohydrates make up half of recommended daily caloric intake. Carbohydrates are present in most foods, including: fruits, vegetables, milk, grains, beans, honey, white sugar, brown sugar, candy, and desserts. The amount and type of carbohydrates consumed affect blood sugar levels. To keep their blood sugar at a safe level, people with diabetes should limit their total carbohydrate intake to between 45 grams (g) and 60 g per meal or less. As such, it is important to choose healthful, non-processed, high-fiber carbohydrates and control portion sizes.

### What is honey?

Raw honey starts out as flower

nectar. After being collected by bees, nectar naturally breaks down into simple sugars and is stored in honeycombs. The honeycombs trigger the nectar to evaporate, which creates a thick, sweet liquid known as honey. Honey, like other sugars, is a condensed source of carbohydrates. One tablespoon of honey contains at least 17 g of carbohydrates. While this amount may seem small, it adds up pretty quickly depending on how many carbohydrates a person consumes at a meal sitting. While honey is made up of sugar, it also contains vitamins, minerals, and antioxidants.

### Processed vs. raw honey

Most of the honey available today is processed, which means it has been heated and filtered after being gathered from the beehive. Raw honey, by contrast, has not been drained of its nutritional value and health benefits. Switching to raw honey can help keep sugar levels down as long as people eat it alongside diabetes medications and other healthful diet choices.

### Nutritional content of honey vs. white sugar

Honey is sweeter than sugar, making it easy to use less. Raw honey, much like white sugar, is a sweetener that contains carbohydrates and calories. One tablespoon of honey has about 64 calories, and one tablespoon of sugar is around 49 calories. While the calorie amounts in each teaspoon appear high, honey is very sweet, so most people only use between one and two teaspoons at a time. The reason honey is higher in calories than sugar is that it is much denser and heavier. Another big

difference between the two is in how the body digests them. Honey is broken down in the body by enzymes already within the honey, while sugar requires enzymes from the body. The glycemic index (GI) measures how much a particular carbohydrate may raise blood sugar levels. The GI for honey is around 55, which is considered a low GI food. Table sugar's GI is 65. Foods with low GIs only cause small increases in blood sugar. As such, they may provide a reduced risk for type 2 diabetes.

### Honey consumption may affect blood glucose and insulin

Several studies have found eating honey may increase insulin levels and decrease blood sugar. A small study carried out in Dubai, United Arab Emirates (UAE), looked at how honey and sugar affect blood sugar. The study found that 75g of honey raised blood sugar and insulin levels in people without diabetes within 30 minutes. A similar test, using the same amount of pure glucose, saw blood sugar levels rise to slightly higher levels. The effect was similar in people with type 2 diabetes. In the UAE study, the participants experienced an initial rise in blood sugar levels. However, the levels dropped within 2 hours. Overall, the blood sugar levels were much lower and remained lower in the honey group, compared to the white sugar group. Because blood sugar levels were better in the groups taking the honey, researchers suggested that honey increased insulin levels. Because insulin helps to move glucose out of the blood, it is possible that the increased insulin from the honey helped to bring down sugar levels.



# VIDOFIBRES BF

(Sugar Beet Fibres - a natural choice)



Pioneers in high-quality natural food additives.  
Swiss made.

Give your products a healthy profile with Unipektin's new range of clean label functional fibres from sugar beets



Fibres are a key part of the future product portfolio and offerings to the health conscious consumer.



Unipektin has recently launched the new high quality sugar beet fibre VIDOFIBRES BF W made from 100% natural sugar beet pulp at Unipektin's Eschenz site in Switzerland.

**Promotes digestive health**

- This highly functional dietary fibre consists of both soluble and insoluble fibres.
- The insoluble fibres act as cleaner and absorb water, and the soluble fibres feed the healthy bacteria in the colon, hence contributing to regularity and movement and counteracting constipation, increasing overall well-being.
- Furthermore, sugar beet fibres can act as filler owing to their water absorption capabilities, prolonging the feeling of fullness. In that way, this fibre is well-suited for products aimed at weight management.



Unipektin has 80 years of experience in hydrocolloids and the food ingredients processing business. The sugar beet fibre is the latest addition to Unipektin's range of fibres, following the apple fibre, VIDOFIBRE AF, introduced last year.

**For more detail please contact:**

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A study carried out at King Saud University, Saudi Arabia, also explored the connection between honey and blood glucose. It found that honey:

- decreased fasting serum glucose (glucose after fasting for at least 8 hours)
- increased fasting C-peptide (peptide helps stabilize and equal out insulin)
- increased 2-hour postprandial C-peptide (amount of peptide after eating)

Further research on honey consumption and type 2 diabetes. Additional studies have looked at the effect of adding honey to the diets of people with type 2 diabetes.

### Effect on long-term blood glucose levels

While honey is a more healthful alternative to refined sugar, more studies are being carried out to test the benefits for people with diabetes. An 8-week study carried out at the University of Tehran, Iran, found that individuals who consumed honey long-term experienced increased blood sugar levels. However, the study also showed that people with type 2 diabetes who ate the honey lost weight and had reduced cholesterol levels in their blood. In line with their findings, the researchers in Tehran recommended "cautious consumption" of honey for people with diabetes.

### Anti-microbial and anti-bacterial properties

Other studies have presented significant evidence of the health benefits of consuming honey for people with type 2 diabetes. In fact, several studies find honey can benefit people with diabetes as it: has anti-microbial properties has anti-bacterial properties is an excellent source of antioxidants

### Fighting bacteria and reducing inflammation

One report from Athens, Greece, finds these properties make honey

beneficial for:

- fighting resistant bacteria
  - preventing inflammatory processes from diabetes
- In addition, antioxidants may also protect against many other diseases.

### Complementing anti-diabetes medication

Another study, this one published in the Journal of Diabetes and Metabolic Disorders, reported that combining diabetes medications with honey is beneficial.

These findings support using honey to supplement diabetes treatment due to its:

- potent antioxidants
- ability to lower blood sugar
- ability to increase insulin

### Replacing sugar with honey for diabetes

Consumption of raw honey has many benefits, including increasing insulin and decreasing blood sugar. Honey is a healthful sweetener, especially when compared to refined sugars, such as white sugar, turbinado, cane sugar, and powdered sugar. While honey contains more carbohydrates and calories than white sugar, it is natural, less processed, only modestly impacts blood sugar, and contains some nutrients. People with type 2 diabetes who want to include honey in their daily diet should introduce it slowly, consuming a little at a time to see how their blood sugars react.

While honey does provide some health benefits, other whole foods contain more concentrated doses of --nutrients, such as antioxidants and fibre. Honey is very sweet, so adding small amounts can really sweeten a beverage or food. For people with diabetes, using honey in very small amounts should not cause blood glucose to spike dramatically. So, people with diabetes may consume honey instead of sugar in moderation, as part of a healthful diet.

## Dairy: Is it good or bad for you?

Medical News Today 19  
June 2017 by Hannah  
Nichols

Dairy is a controversial and confusing food group. Health organizations promote dairy as vital for improved bone health, yet other experts disagree and hail dairy as detrimental to health. Who is correct? Is dairy good or bad for your health?

Image © iStock.com/  
Magone

What do government health guidelines say? According to the United States Department of Agriculture (USDA) food MyPlate guidelines, to get all the nutrients you need from your diet, healthy food and beverage choices should be made from all five food groups, including fruits, vegetables, grains, protein foods, and dairy. The dairy food group consists of all fluid milk products and many foods that are made from milk. The USDA recommend that food choices from the dairy group should retain their calcium content and be low-fat or fat-free. Fat in milk, yogurt, and cheese that is not low-fat or fat-free will count toward your limit of calories from saturated fats.

While calcium-fortified soymilk is included as part of the dairy group, food products such as butter, cream, sour cream, and cream cheese are not included due to their low calcium content. Daily dairy recommendations depend on your age. Children 2-3 years old require two cups of dairy per day, 4-8 year-olds need 2.5 cups per day, and three cups per day are recommended for age 9 and upward. For people who do not consume dairy products, the USDA mention the following foods to contribute toward calcium intake: kale leaves, kale leaves, calcium-fortified juices, breads, cereals, rice or almond milk, canned fish,

soybeans, other soy foods, such as tofu, soy yogurt, and tempeh, and some leafy greens including collard and turnip greens, kale, and bok choy. They point out that the amount of calcium that is absorbed from these foods varies.

### MyPlate vs. Healthy Eating Plate

The USDA developed the MyPlate nutrition guide in 2011 as a replacement for their MyPyramid that was used for 19 years. The Harvard T.H. Chan School of Public Health state that while the USDA MyPlate has been revised to reflect some key findings in nutritional scientific research, it does not offer a complete picture of basic nutrition advice. The Harvard T.H. Chan School of Public Health created the Healthy Eating Plate to address the deficiencies they identified in the USDA's MyPlate. One major alteration to the Healthy Eating Plate compared with MyPlate is the replacement of the dairy glass with a glass of water. The Healthy Eating Plate recommends drinking water, tea, or coffee and limiting dairy to one to two servings per day, since they say that high intakes are associated with a greater risk of prostate cancer and possibly ovarian cancer. MyPlate recommends dairy with every meal to protect against osteoporosis. However, the Harvard T.H. Chan School of Public Health report that there is little to no evidence to support this statement and considerable evidence that too high an intake of dairy can be harmful.

### Nutrients in milk

Milk is a good source of calcium, potassium, vitamin D, and protein. Milk is an important source of calcium and may help maintain and improve bone health. The USDA report that dairy products are the primary source of calcium in the American diet. They also say that calcium helps to build bones and teeth, maintain bone mass, improve bone health, decrease the risk of osteoporosis and, what is more, diets that have an intake of three cups of dairy products per day can

improve bone mass.

Furthermore, they note that dairy intake is particularly important to bone health during childhood and adolescence - a time when bone mass is being built. Potassium in milk may help with maintaining blood pressure. Vitamin D helps the body maintain the correct calcium and phosphorous levels, which, in turn, contributes to building and maintaining bones. Dairy intake is also associated with a reduced risk of cardiovascular disease, type 2 diabetes, and lower blood pressure. The USDA highlight that it is important to choose low-fat or fat-free foods from the dairy group because foods high in saturated fats and cholesterol have adverse health implications. They say that diets high in saturated fats raise "bad" low-density lipoprotein (LDL) cholesterol in the blood. High LDL cholesterol increases the risk for coronary heart disease. Whole milk and many dairy products are high in saturated fat. To help keep blood cholesterol levels healthy, the USDA recommend limiting the intake of foods high in saturated fat. In summary, government guidelines say that milk is rich in nutrients. Calcium-rich low-fat or fat-free dairy products are essential for bone health, heart health, and type 2 diabetes, but full-fat dairy increases the risk for coronary heart disease. All sounds simple enough. So where does the controversy come in?

### Is eating dairy 'natural'?

It is often argued that dairy products should not be consumed since it is not "natural" to do so. Cow's milk is designed to provide all the protein, micronutrients, and fatty acids that calves need to grow in the same way that breast milk is designed to nurture human babies. Not only are humans the only species that consumes milk as adults, but we are also the only species that drinks milk from other animals. Humans are not calves, and they have no need to grow, so why drink milk? Quite a convincing

argument.

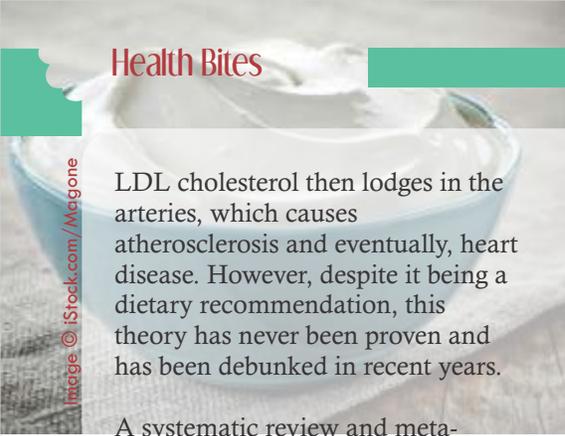
Dairy does not appear to be essential for humans from an evolutionary perspective and was not consumed until after the agricultural revolution. However, in some parts of the world, dairy has been consumed for thousands of years, and research has shown that genes have altered in humans to accommodate dairy consumption. While consuming dairy may not have once been natural for humans, the evidence that shows that we have genetically adapted to eat dairy indicates that it may now be natural for us to eat and drink it.

### Lactose intolerance

Another argument against dairy consumption is that around 75 percent of the world's population and about 25 percent of the people in the U.S. lose their ability to produce digestive lactase enzymes sometime after weaning. Lactase enzymes are present in infants and young children to help them break down and digest lactose - a sugar present in milk. A lack of lactase enzymes means that lactose cannot be split into glucose and galactose for absorption into the bloodstream, which results in lactose intolerance. After eating lactose-containing dairy products, people who are lactose intolerant experience abdominal bloating, pain, nausea, flatulence, and diarrhea. Some lactose intolerant individuals can eat fermented dairy, such as yogurt, or high-fat, dairy like butter. Most people of Northern European ancestry can digest lactose with no problems whatsoever.

### Full-fat dairy and cardiovascular disease

The USDA guidelines and conventional wisdom dictate that full-fat dairy increases the risk of heart disease due to its high saturated fat content. Research investigating the link between dairy consumption and heart disease is conflicting. The theory behind this idea is that saturated fat raises levels of LDL cholesterol in the blood,



LDL cholesterol then lodges in the arteries, which causes atherosclerosis and eventually, heart disease. However, despite it being a dietary recommendation, this theory has never been proven and has been debunked in recent years.

A systematic review and meta-analysis published in the *Annals of Internal Medicine* and a meta-analysis published in *The American Journal of Clinical Nutrition* found no link between dietary saturated fat and an increased risk of coronary heart disease, stroke, and cardiovascular disease. A study that used data from the Nurses' Health Study - a long-term epidemiological study in the U.S. examining risk factors for major chronic disease in women - found that high intake of dairy fat is connected with a greater risk of coronary heart disease.

However, other studies have shown that full-fat dairy may protect against heart disease and stroke. For example, research examining 10 studies that included full-fat dairy consumption showed that drinking milk might be associated with "a small but worthwhile reduction in heart disease and stroke risk." In grass-fed cows, full-fat dairy has been linked with a reduced risk of heart disease and stroke. One study indicated that people who consumed the most full-fat dairy had a 69 percent lower risk of cardiovascular death than individuals who consumed the least. Research examining the role of dairy in heart disease is conflicting. However, heart disease risk seems to be significantly lower when consuming full-fat dairy in countries with grass-fed cows.

**Does dairy benefit bone health?**  
Most health organization guidelines recommend an intake of two to three servings of dairy every day to ensure adequate calcium for bone health. Dairy intake may increase bone density and prevent age-related bone loss and osteoporosis.

Some experts disagree with these guidelines because countries with higher dairy consumption have higher rates of osteoporosis than countries with lower intakes of dairy. However, it has to be noted that dairy consumption is not the only difference between these countries and does not conclude that dairy causes osteoporosis.

Two observational studies are often cited in the argument against consuming milk for bone health. The first study suggests that consumption of dairy products - particularly at the age of 20 years - is associated with a greater risk of hip fracture in old age. The second study found no evidence that intake of milk or calcium protects against hip or forearm fractures. However, numerous studies support the benefits of dairy consumption for bone health. Research indicates that consuming dairy increases bone density and may prevent age-related bone loss and osteoporosis. Randomized controlled trials are considered to be more reliable than observational studies and have shown in every age group that dairy improves bone health.

Dairy and calcium consumption leads to increased bone growth in children, decreases bone loss in adults, and improves bone density and lowers fracture risk in seniors. Other than calcium, dairy provides other nutrients that are beneficial to bone health, such as protein and phosphorous, and Vitamin K-2 in full-fat dairy from grass-fed cows. Vitamin K-2 is a fat-soluble vitamin and is not present in low-fat and fat-free varieties of dairy products. Vitamin K-2 helps to regulate calcium metabolism, is vital for bone health, and may prevent heart disease.

**Other conditions associated with dairy**  
Dairy has been linked to the development and prevention of many conditions and appears to

cause and cure various diseases simultaneously. We check out the evidence behind these claims.

#### Obesity

Evidence suggests that dairy consumption lowers the risk of developing type 2 diabetes. Dairy products, and full-fat dairy products in particular, might be avoided due to concerns that these foods are fattening and may lead to obesity. However, a study published recently in the *American Journal of Clinical Nutrition* determined that children who drink whole milk are leaner and have higher levels of vitamin D than those who drink the low-fat or skimmed varieties.

#### Type 2 diabetes

While flavored milk should be avoided with diabetes, there is no reason that people with diabetes should not consume dairy products. In fact, research by Dr. Ulrika Ericson, of the Lund University Diabetes Center in Malmö, Sweden, and colleagues found that people who consumed the highest amounts of high-fat dairy products had a 23 percent lower risk of developing type 2 diabetes than individuals who consumed the least amount of dairy per day. Harvard University found that teenagers who drink milk are 43 percent less likely to develop type 2 diabetes as adults compared with non-milk drinkers.

#### Prostate cancer

Some studies have found that a high dairy intake is associated with an increased risk of prostate cancer. One study reported that having higher intake of dairy increased the risk of prostate cancer by 32 percent. This greater risk may be linked to calcium levels. In contrast, a study published in the *British Journal of Cancer* does not support the theory that high calcium intake increases the risk of prostate cancer.

#### Parkinson's disease

Katherine C. Hughes, of the Harvard T.H. Chan School of

Images © iStock.com/AD077



## Can turmeric help manage diabetes? What the evidence says

Medical News Today 1 June 2017 by Jon Johnson

**Turmeric has been used for centuries in both food and medicine. The spice is believed to have many potential benefits for the human body. But could turmeric be a new tool to help manage diabetes?**

Turmeric is the common name for the root *Curcuma longa*. It is a bright yellow-orange spice that is a staple in traditional food dishes from many Asian countries. In this article we explore the role of turmeric in alternative and Western medicine. We go on to analyze the potential benefits of the spice for diabetes management.

### Turmeric and medicine

Turmeric and its compounds are being studied for conditions such as cancer, inflammation, and psoriasis. Turmeric plays an important role in medical practices, such as Ayurveda and Traditional Chinese Medicine (TCM). Medical science is interested in the herb, as well, due to the high levels of friendly compounds it contains. Of particular interest is a class of compounds called curcuminoids. One curcuminoid found in turmeric is curcumin. This name is sometimes loosely used to describe all of the curcuminoids in turmeric. Turmeric and curcumin are being studied for a number of human conditions such as:

- ◆ irritable bowel syndrome
- ◆ inflammatory bowel disease
- ◆ cancer
- ◆ arthritis
- ◆ uveitis
- ◆ peptic ulcers
- ◆ inflammation
- ◆ h. pylori infections
- ◆ vitiligo
- ◆ psoriasis
- ◆ Alzheimer's disease

Turmeric is also often added to the

diet to help reduce inflammation and oxidative stress.

### Can turmeric help people with diabetes?

Including turmeric in the diet seems to promote general wellbeing. There is also evidence that indicates turmeric may be especially beneficial for people with diabetes. It is believed that curcumin is the source of many of the medical benefits of turmeric. The focus of most research has been on curcumin itself, rather than whole turmeric. A review in the journal Evidence-Based Complementary and Alternative Medicine compiled more than 13 years of research on the connection between diabetes and curcumin. The result suggests curcumin can help people with diabetes in different ways, as described here:

- Curcumin may help control blood sugar
- Curcumin may help people with diabetes control their blood sugar levels.

Tests using animal models indicated that curcumin could have a positive effect on high blood sugar. Many tests were also able to improve the levels of insulin sensitivity in test subjects. Other studies found that curcumin had little effect on blood sugar. Thus, taking turmeric or curcumin orally may help reduce blood sugar levels to more controllable levels in some people, though more research on humans is necessary.

### Curcumin may help prevent diabetes

Studies suggest that people with prediabetes may not develop full diabetes when given curcumin in capsules. Researchers also noted that many of the studies done over the years showed turmeric might also protect against developing diabetes. One study posted to Diabetes Care found that people with prediabetes who were given curcumin for a period of 9 months were less likely to develop the full-

Public Health and collaborators have found an association between consuming at least three servings of low-fat dairy a day and risk of developing Parkinson's disease.

"The results provide evidence of a modest increased risk of Parkinson's with greater consumption of low-fat dairy products. Such dairy products, which are widely consumed, could potentially be a modifiable risk factor for the disease," said Hughes. The study authors stress that the findings do not mean that dairy products cause Parkinson's disease, they just show a link between the two.

### Depression

Opting for low-fat dairy rather than full-fat dairy reduces the risk of depression, according to Prof. Ryoichi Nagatomi, of Tohoku University in Japan, and team. Adults who consumed low-fat milk and yogurt between one and four times per week were less likely to experience depression symptoms than those who reported no dairy consumption.

### Brain health

People with higher intakes of dairy products have been shown to score significantly higher on memory and brain function tests than individuals who drink little or no milk. The A2 type of beta-casein protein contained in cow's milk is suggested to increase the body's defences against neurodegenerative diseases, pancreatitis, and cancer by raising an essential antioxidant in the body.

The jury is out on whether dairy is good or bad for you; the arguments for and against are ongoing, and the health effects vary between individuals. However, for the most part, evidence shows that dairy consumption has many benefits.

blown condition. The study also noted that the curcumin appeared to improve the function of the beta-cells that make insulin in the pancreas. Accordingly, including turmeric or curcumin in the diet may be beneficial for people who want to reduce their chance of developing diabetes.

### Curcumin may reduce diabetes-related complications

Compounds like curcumin may also help with a few diabetes-related complications. People with diabetes often have liver disorders, such as fatty liver disease. Researchers gave test subjects curcumin over a long period of time. As a result, these people appeared to have fewer symptoms of liver disorders. Curcumin may also help:

- ◆ prevent nerve damage caused by diabetes
- ◆ prevent diabetic cataracts, according to results of animal tests
- ◆ fight cognitive problems, due to antioxidant and anti-inflammatory properties
- ◆ fight kidney disease, by reducing important markers

The compound curcumin was reported to be active against diabetic vascular disease, and it seems to speed wound-healing. There is also evidence that suggests long-term curcumin intake can improve aspects of digestion.

Curcumin may adjust immune response in type 1 diabetes. An article posted to *Clinical and Experimental Immunology* also noted that curcumin may adjust how the over-active immune system works in people with type 1 diabetes. Researchers found that curcumin lowers the T cell response of the body. This is the immune response that destroys the pancreatic beta-cells that make insulin. This means that curcumin may help empower the immune system. Similarly, it may boost the immunomodulatory medicines prescribed to manage type 1 diabetes.

### Risks, considerations, and side effects

Before taking any new supplements, a healthcare professional should be consulted. Turmeric is considered safe and can be included in the diet regularly. However, there is the potential for side effects when turmeric or curcumin are taken in large doses. Some people experience symptoms of indigestion, nausea, or diarrhea if they take too much of either.

People with certain conditions may need to avoid turmeric altogether, as it may make these worse.

Conditions that might be affected include:

- ◆ gallbladder disease
- ◆ kidney stones
- ◆ anemia

Taking too much curcumin or turmeric for a long period of time may also contribute to liver problems. Similarly, the spice may increase the effects of other blood sugar medications, potentially leading to hypoglycemia, or low blood sugar. The best course of action is for people to work with a knowledgeable doctor or healthcare practitioner before using supplements like curcumin for any of their symptoms.

### Turmeric and diabetes management

If people with diabetes add turmeric to their diets, it should be used as a supplement to a comprehensive diabetes management plan. Many people with diabetes respond well to:

- ◆ eating a healthful diet
- ◆ exercising regularly
- ◆ managing their stress levels

Doctors will often work directly with a person to create an individualized health plan that addresses their specific symptoms. A good diet plan for people with diabetes usually begins with a move away from processed foods. People should aim for a diet rich in natural, unprocessed meals instead. Eating a wide variety of vegetables, fruits, and grains helps to ensure a diet contains as many nutrients as

possible. People with diabetes must watch their carbohydrate intake, particularly carbohydrates in processed and refined sugars, as these can cause spikes in the blood sugar. Although natural sugars such as those found in fruit are better options, these also need to be accounted for when managing diabetes. Fiber-rich foods are also needed, as they slow the rate of sugar absorption in the body. This may help prevent blood sugar spikes during the day. Including plenty of other healthy spices besides turmeric in the diet may also help some people manage their diabetes symptoms. These include:

- ◆ cinnamon
- ◆ ginger
- ◆ cumin

### Criticisms of turmeric and curcumin

*Not everyone is convinced curcumin is as good as it seems.*

A recent study posted to the *Journal of Medicinal Chemistry* was critical of the use of curcumin to help prevent or treat anything. The researchers argued that curcumin is not very bioavailable, and that the quality of the herb can vary greatly. This makes it difficult to use or test its compounds in a controlled way. They called for more careful examination of curcumin in future research.

### Outlook on taking turmeric for diabetes

Turmeric is not a medicine in the Western sense of the word. It is not a replacement for any medications a person may be taking. It should also not be used as a substitute for any part of diabetes care. Both turmeric and curcumin can easily be taken to supplement a diabetes-care regimen. This should be done under the guidance of a doctor, who may ask a person to start out with a low dose to gauge their reaction to it. The dose can be increased, gradually, to avoid any complications or side effects. Pairing turmeric or curcumin with oils, fats, or black pepper may also increase the effect of their beneficial compounds.

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