

THE UNTAPPED POTENTIAL OF INDIAN HERBS

NUTRACEUTICALS & FUNCTIONAL FOODS

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Bengaluru

05.10.2017
PFNDAI, Mumbai

Golden Jubilee Seminar on Emerging Foods for Healthier India

 **Himalaya**TM
SINCE 1930

OUR VISION

Wellness in every home
through herbal healthcare



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Himalaya
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Ayurvedic Nutrition

Nutrition plays a central role in Ayurvedic living. Ayurveda places special emphasis on Ahara(diet) and Anna (food) as a means to good life, health and wellness. Healthy and wholesome Food nourishes the mind, body and soul. Ayurveda asserts that the quality and appropriate quantity of food are necessary for healthy life. Food taken in proper quantity provides strength, Vigor, good complexion and nurtures the health of the tissues.

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The diet which besides providing the basic nutrition to the body, helps to maintain the healthy state of the body and prevents the occurrence of diseases should be consumed

Charaka Samhita : Sutra Sthana : 5

If wholesome diet is given in a planned way, then there is no need to administer medicines and if wholesome diet is not being used then too there is no need to give medicine,
as this is not going to cure the disease in the absence of wholesome diet.

Vaidhya Jeevana : 1/10

Nutraceuticals & Functional Foods

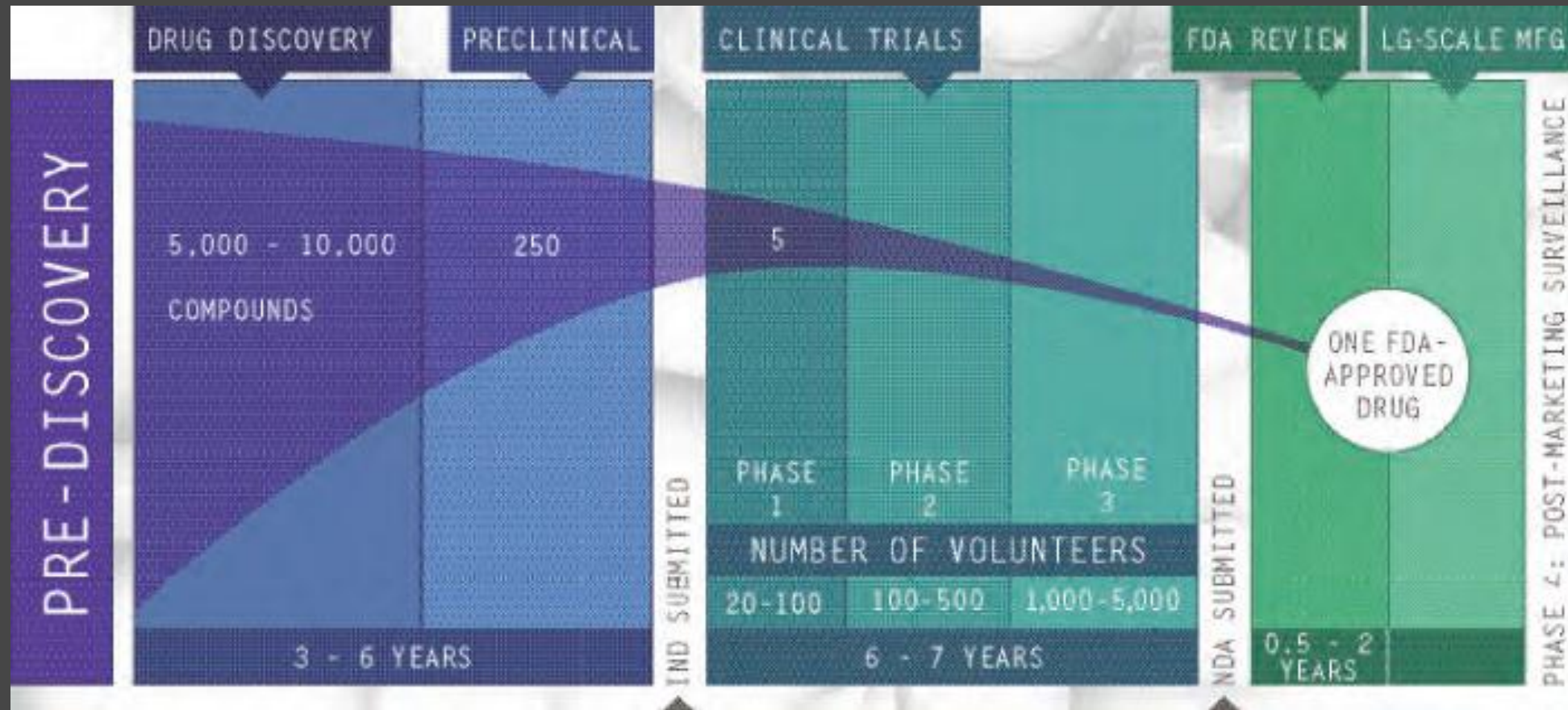
WHY THERE IS GROWING DEMAND FOR THESE SUPPLEMENTS?



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DRUG DISCOVERY - TODAY



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HOW MUCH COST IS AFFORDABLE

Drug Development Costs

Average cost to develop a drug (including the cost of failures):

- Early 2000s = \$1.2 billion* (some more recent studies estimate the costs to be even higher)
- Late 1990s = \$800 million*
- Mid 1980s = \$320 million*
- 1970s = \$140 million*

Rising share of government expenditure (USD billion)

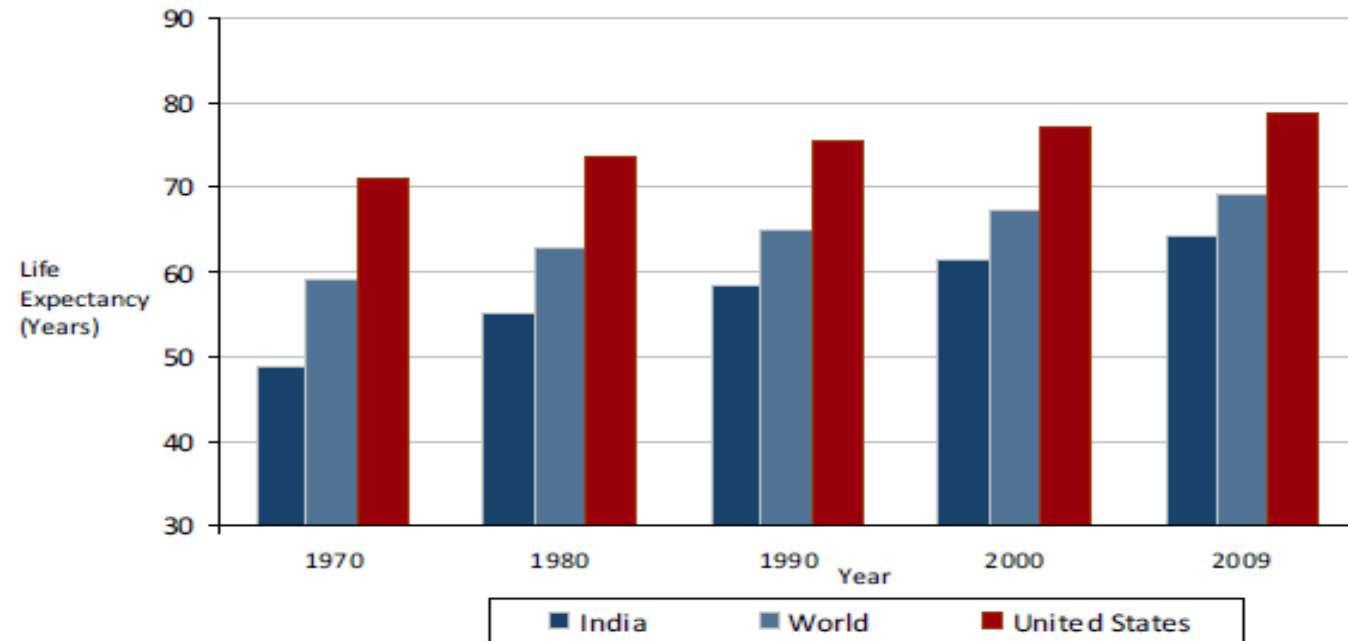


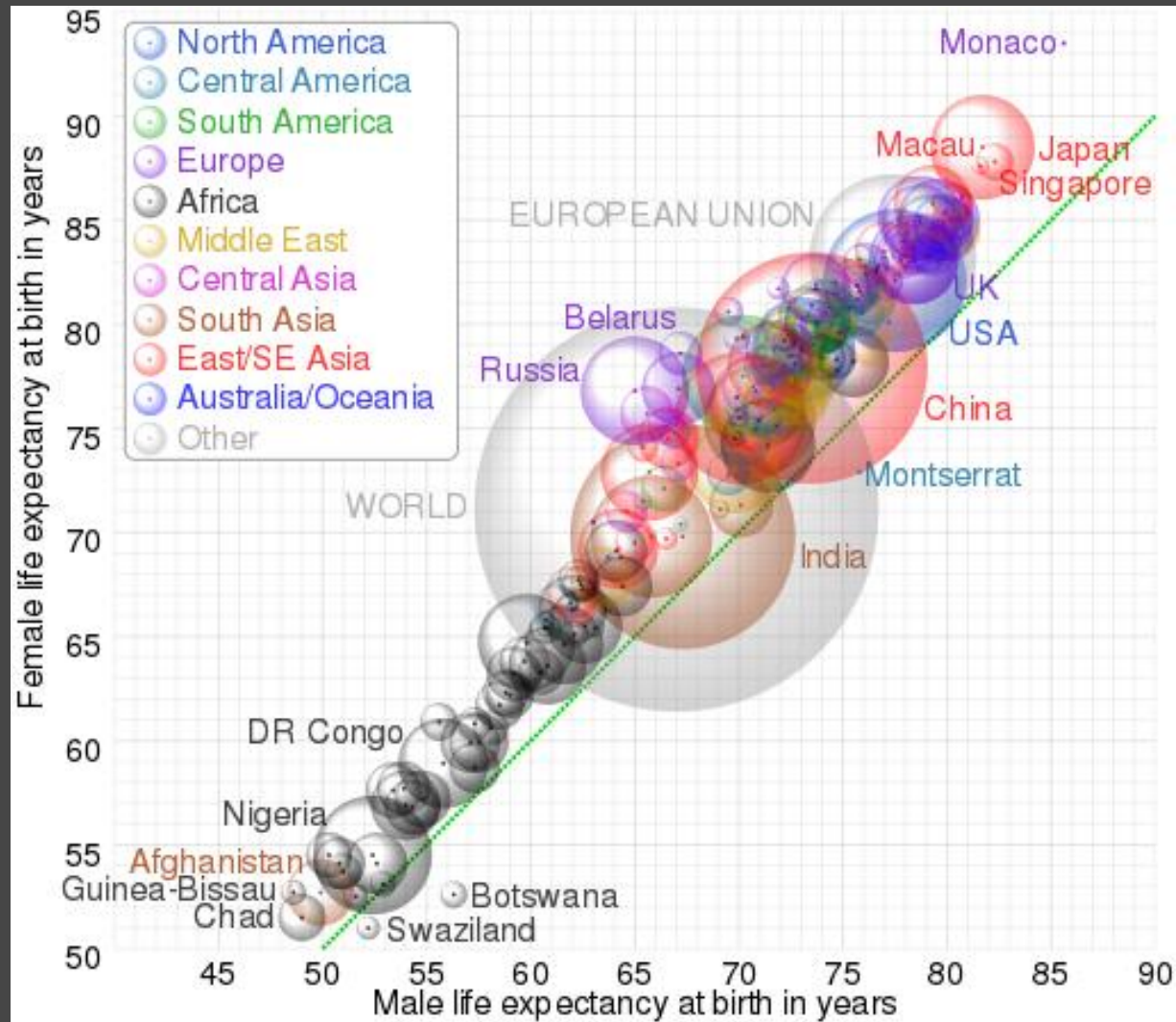
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Life expectancy across regions, (World), 1970-2009

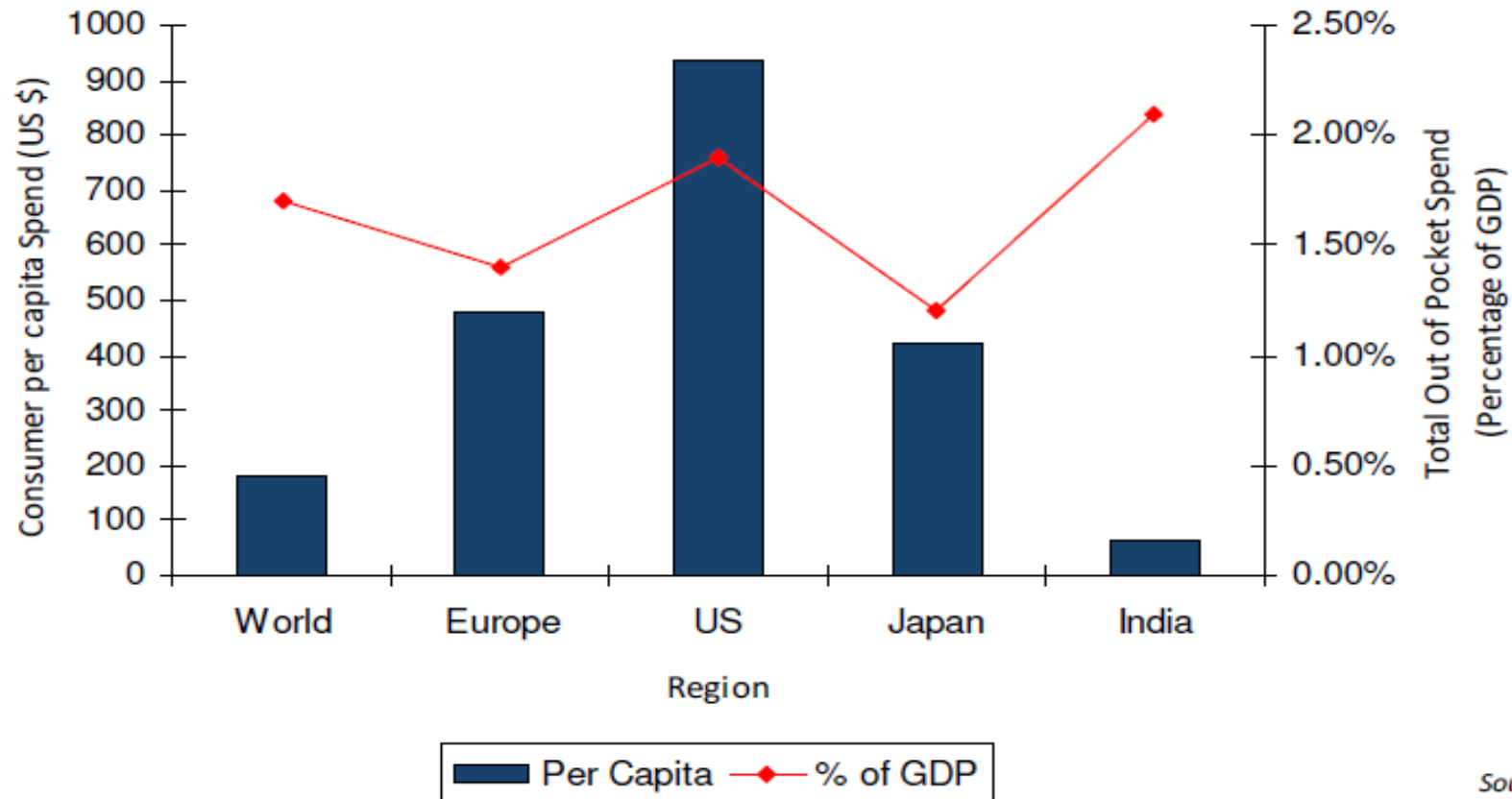




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Consumer's Out of pocket spend on healthcare : Comparative split by region (world)



Source: WHO Statistics

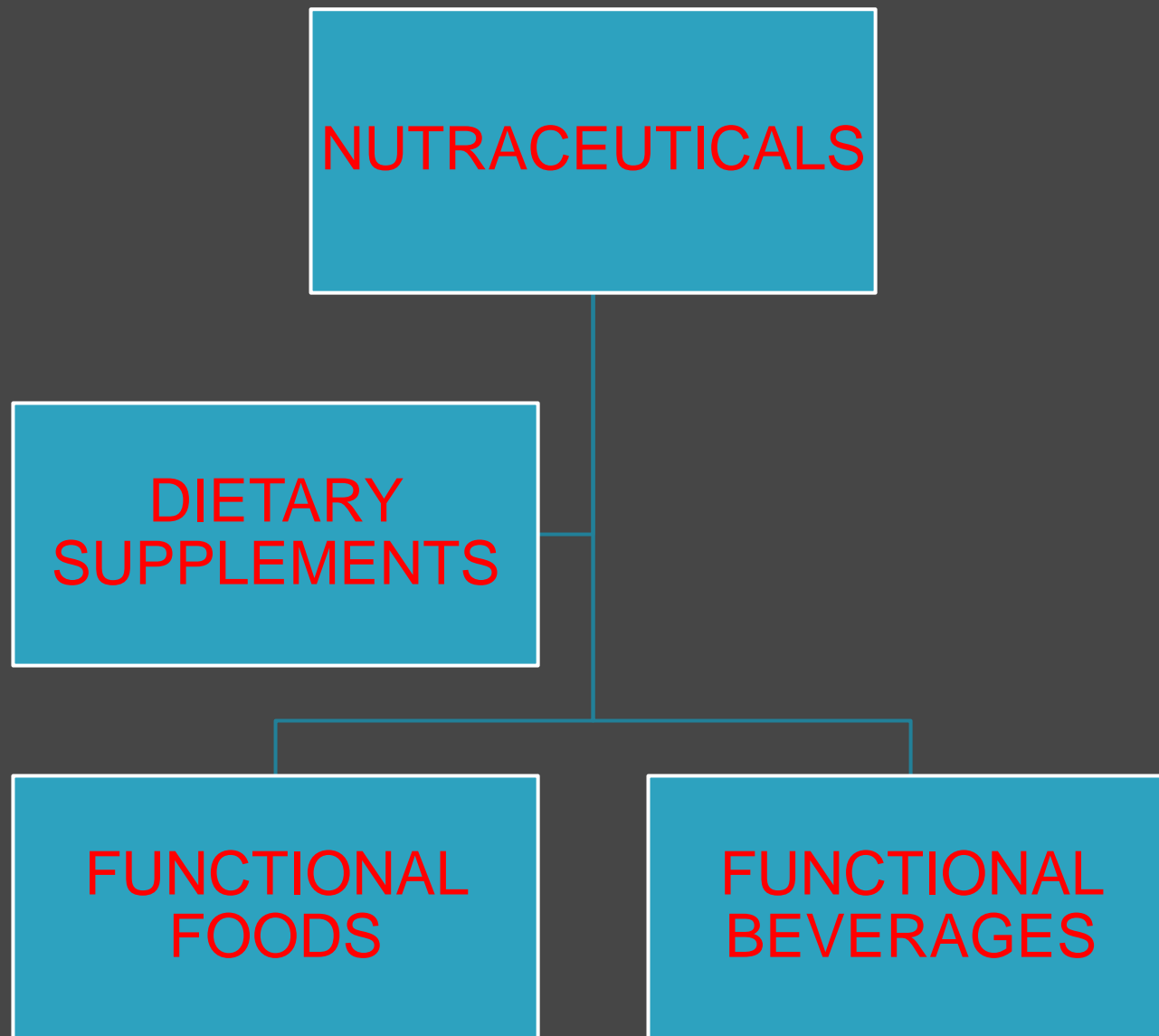
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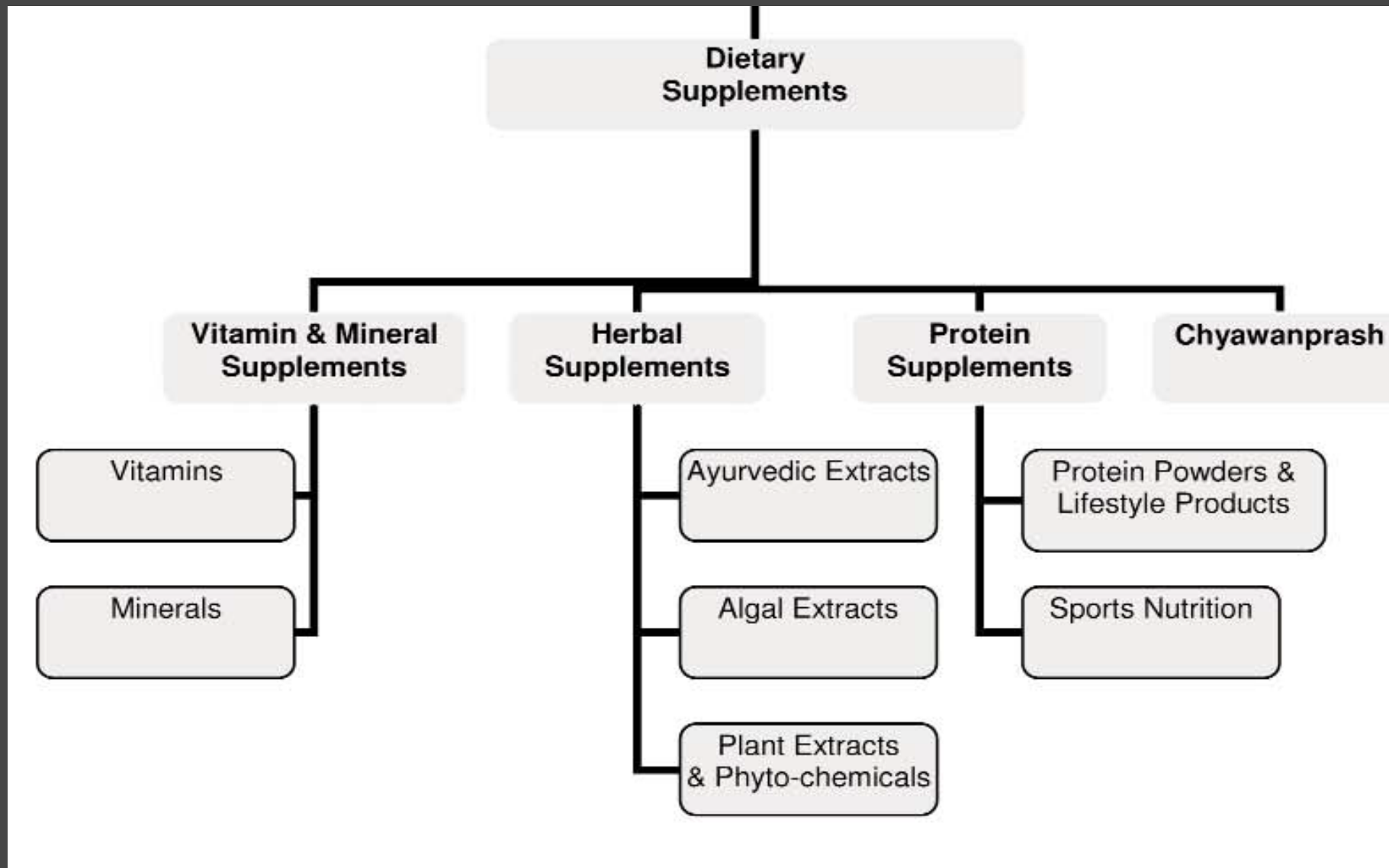
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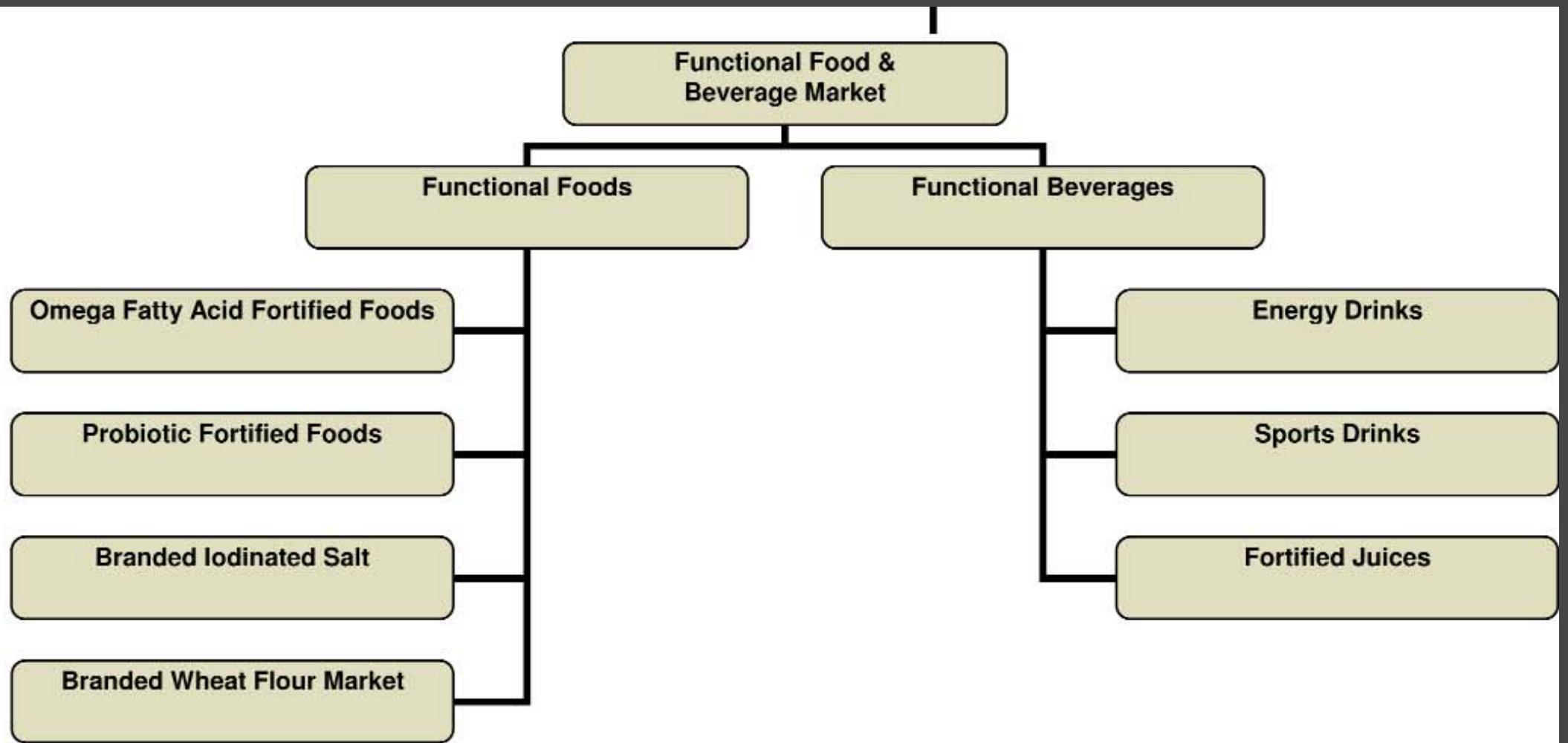
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Nutraceuticals	Pharmaceuticals
Works on root causes and take longer time for recovery	Relatively more instant in effect
Do not have side effects	For severe illnesses have side effects
Focuses on prevention & wellness	Focuses on illness & treatment
No prescription needed for buying	Sold only on prescription except OTC
Needs no approval of FDA	Needs approval of FDA







Spearheading Nations

- United States of America
- Japan
- Israel
- Germany

Key Growth Geographies

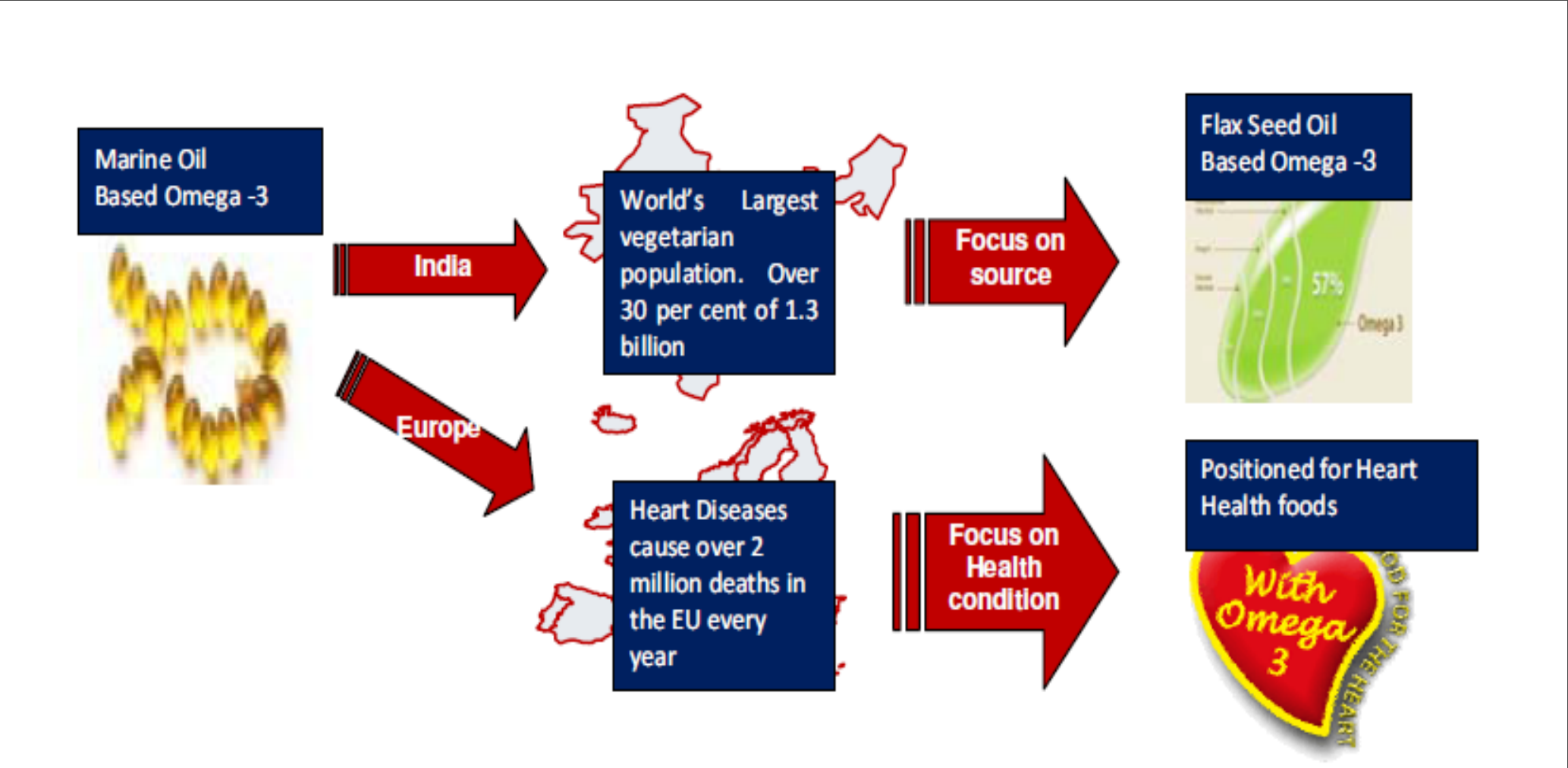
- China
- India
- Brazil

Nutraceutical Future Focus

Application/Disease specific
Focus for both functional food and beverages as well as dietary supplements

Country	Given Label	Definition	Regulatory Body
United States of America	Dietary supplements	Any of the following which have a beneficial nutritional effect. 1. Vitamins 2. Minerals 3. Botanicals and their extracts 4. Amino acids 5. Concentrates and Extract	Foods and Drug Authority
European Union	Food supplements	1. Concentrated sources of Nutrition 2. Other substances with a beneficial nutritional effect	European Food Safety Authority
India	Foods for special dietary use	1. Plants/Botanicals : Whole or Extracts 2. Minerals, Vitamins, Amino acids and Enzymes 3. Substances of animal origin	Food Safety and Standards Act of India
Japan	Foods for specific health use	Any food that can provide and/or supplement any of the following 1. Nutrition 2. Sensory Satisfaction 3. Beneficial Physiological Effect	Japan Health and Nutrition Food association
China	Health foods	Any food that 1. Should suitable for specific group(s) of people 2. Should also be able to adjust body functions 3. Should not aim at curing disease or cause acute sub-acute or chronic harm to the body	State Food and Drug Administration

CUSTOMIZATION – EU & INDIA



????? \$

2050

5 trillion \$

2050

816 billion \$

2016

450 billion \$

2016

2012

81 billion \$

2012

2009

62 billion \$

2009

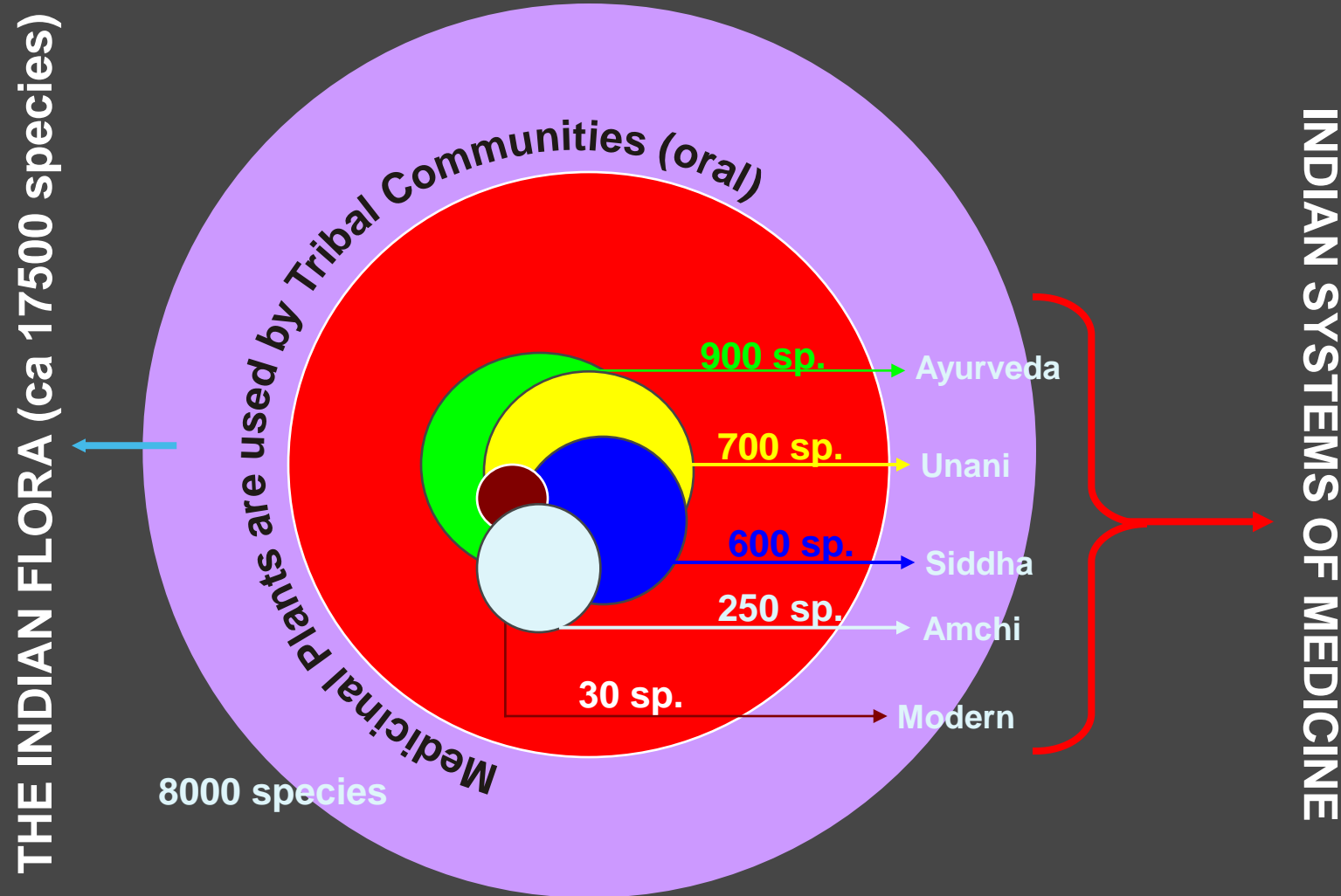
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India's strength in Herbal Technology



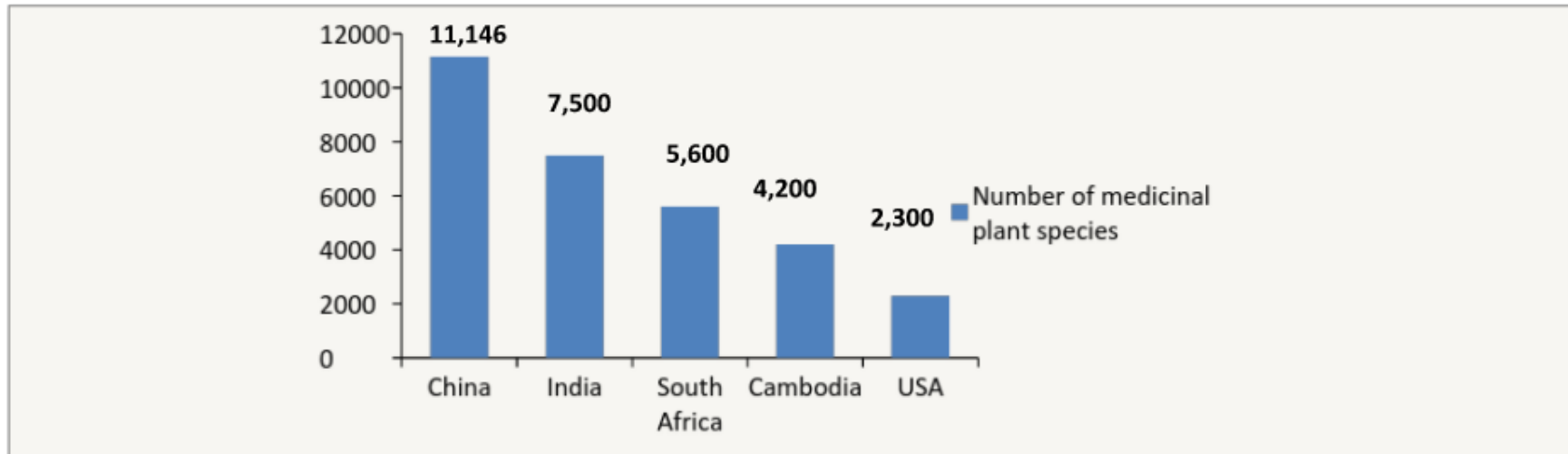
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China has the highest number of medicinal plants and also the leader in export of medicinal plants globally.

Global market: Top 5 medicinal plant producer countries

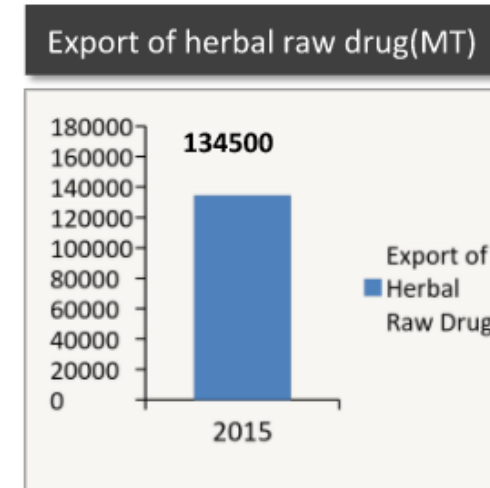
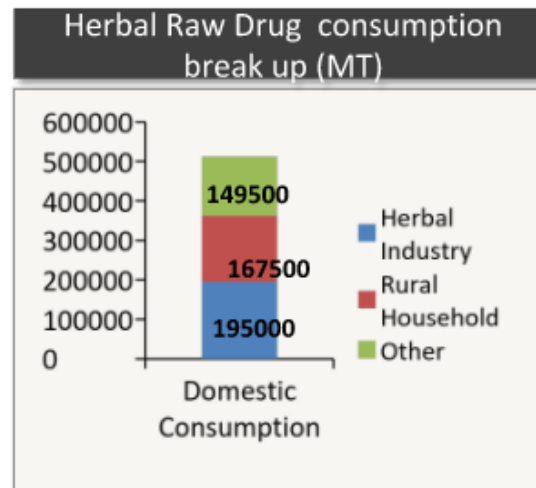
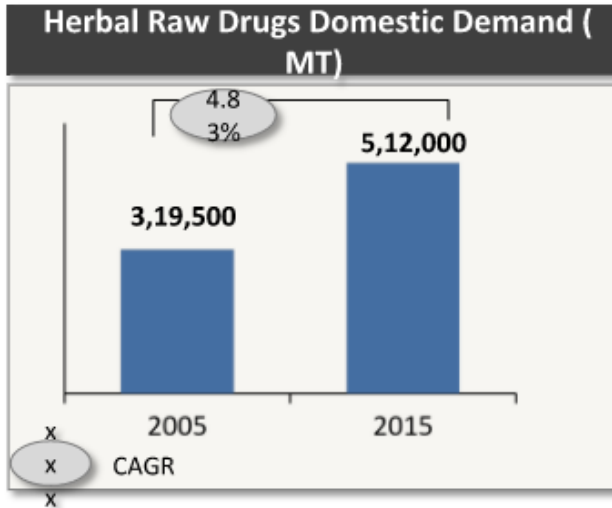
Medicinal plant species (Sourcing nations)



- More than **1/10th** of plant species are used in drugs and health products with more than 50,000 species being used.
- **China** and **India** have the highest numbers of medicinal plants used, with **11,146** and **7500** species, respectively, followed by Colombia, South Africa, the United States, with percentages of medicinal plants in Asia ranging from **7 %** in Malaysia to **44 %** in India.
- **China** is the major exporter of medicinal plants accounting to **15%** of total medicinal plant export globally
- **India** ranks second globally in exports contributing **0.5%** only. ⁷

Demand for herbal raw drug in the country has been growing at CAGR 4.83% since last 10years

Indian Medicinal plant sector profile

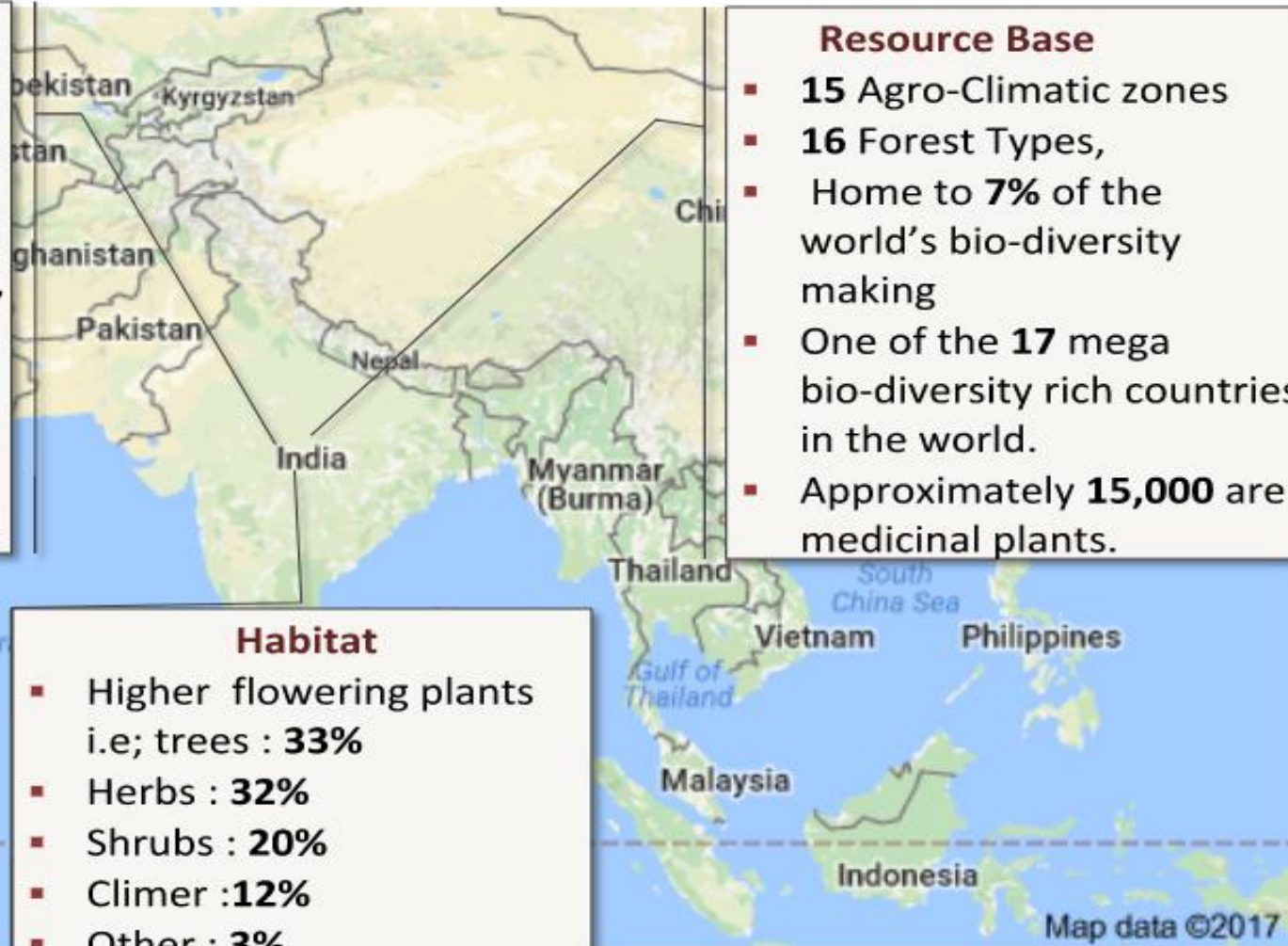


- Total Commercial Demand of Herbal Raw Drugs in the country for the year 2014-15 has been estimated at **5,12,000 MT**.
- **38%** of the total commercial demand was driven by Herbal industry which consumed **195000MT** herbal raw drug (**USD 303 Million**) followed by rural household which has approx. **33% (USD 76 Million)** share in consumption.
- Export of herbal raw drug stood at **134500MT** which is approx. **USD 499 Million**. Export is below potential due to:
 - No inventories
 - No collection procedures or protocols
 - No standard cultivation procedures outlined or adhered to
 - No monitoring of production
 - lack of standardised pricing mechanisms
 - Lack of proper surveillance on wild plant collection versus cultivated plant harvest

Indian Medicinal plant sector profile

Distribution

- **85% to 90%** of these come from the wild.
- **70%** found in tropical areas across the Western & Eastern ghats, Vindhyas, Chotta Nagpur plateau, Aravalis & Himalayas.
- **<30%** found in the temperate and alpine areas and higher altitudes



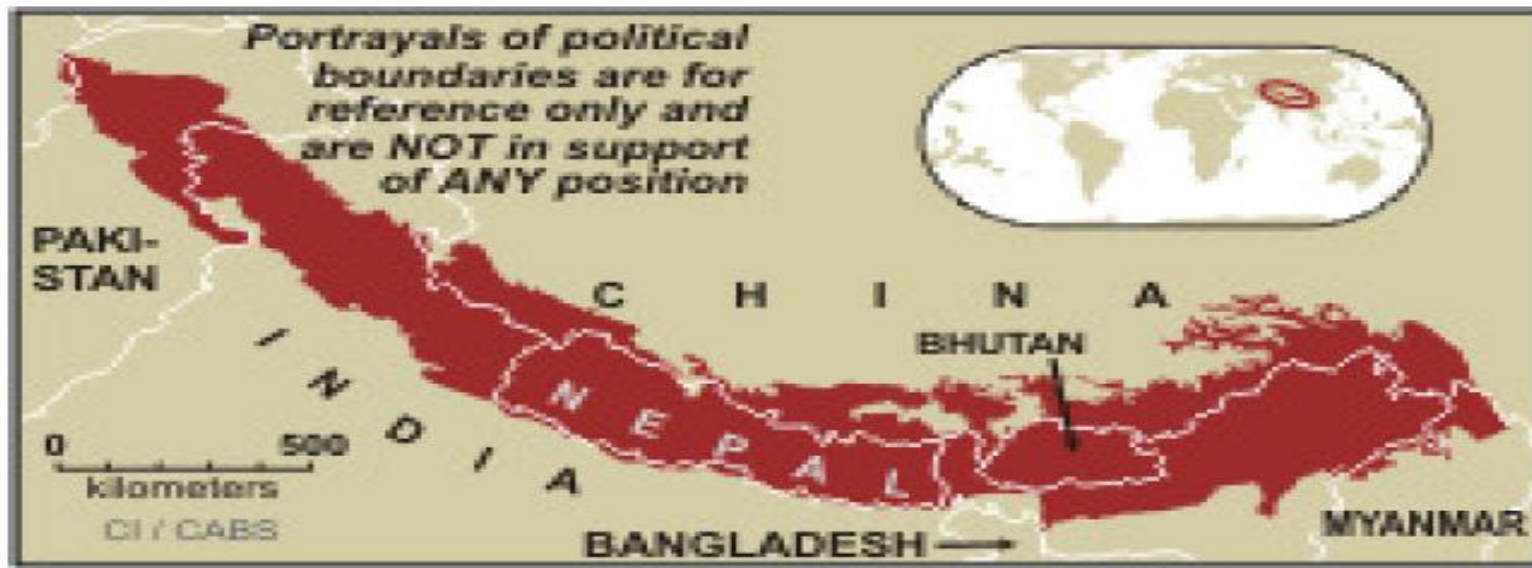
Resource Base

- **15** Agro-Climatic zones
- **16** Forest Types,
- Home to **7%** of the world's bio-diversity making
- One of the **17** mega bio-diversity rich countries in the world.
- Approximately **15,000** are medicinal plants.

Habitat

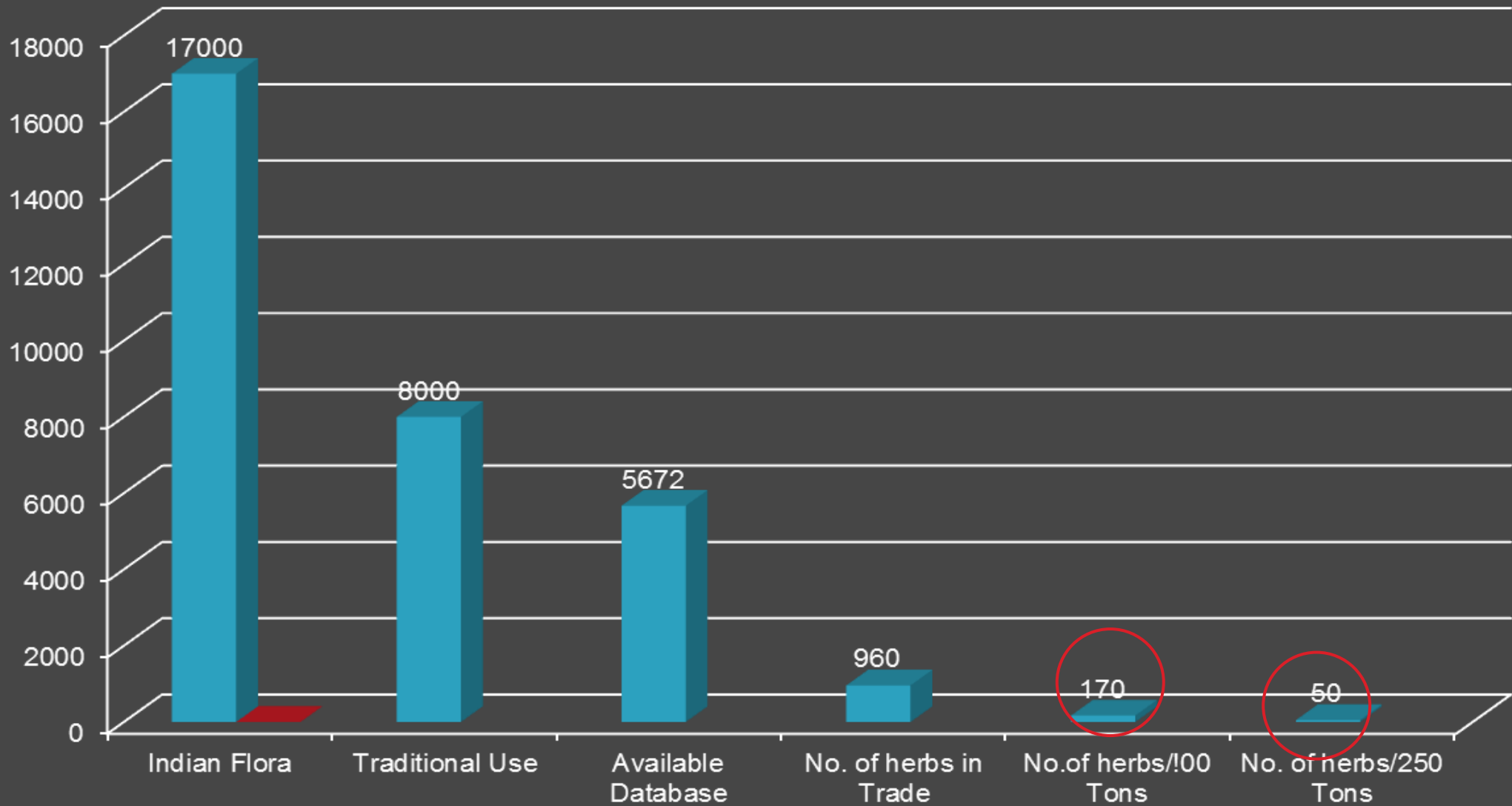
- Higher flowering plants i.e; trees : **33%**
- Herbs : **32%**
- Shrubs : **20%**
- Climer : **12%**
- Other : **3%**

Map data ©2017



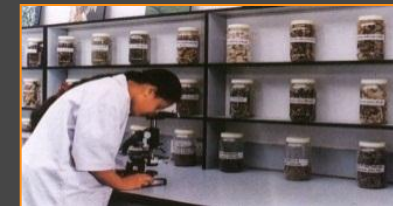
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ESTABLISHING AUTHENTICITY

- ❑ Morphologically
- ❑ Microscopic
- ❑ DNA Fingerprinting



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• Pharmacognosy-

–Adulterations & Substitutes - Unintentional

- Traditional Literature describes more than one species



Bala

- » *Sida rhomboidea*
- » *Sida retusa*
- » *Sida cordifolia*
- » *Sida acuta*
- » *Sida rhombifolia*
- » *Sida veronicaefolia*
- Sida spinosa*
- Abutilon indicum*
- Urena lobata*
- Urena sinuata*
- Pavonia odorata*
- Pavonia zeylanica*

Formulary vs. Market Samples: *Mucuna pruriens*

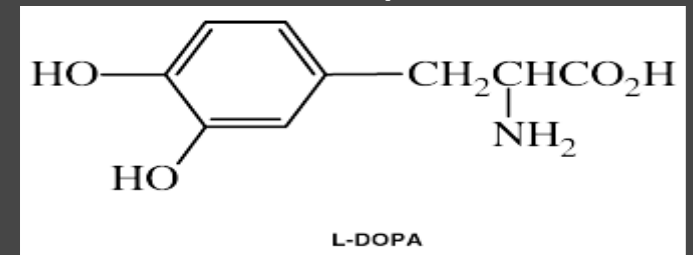
Mucuna pruriens



Active constituent



L-Dopa



Mucuna deerigiana



M. utilis



M. cochinchinensis



Canavalia virosa




Canavalia ensiformis



DNA BARCODING THE NEXT TOUGH TEST FOR AUTHENTICITY

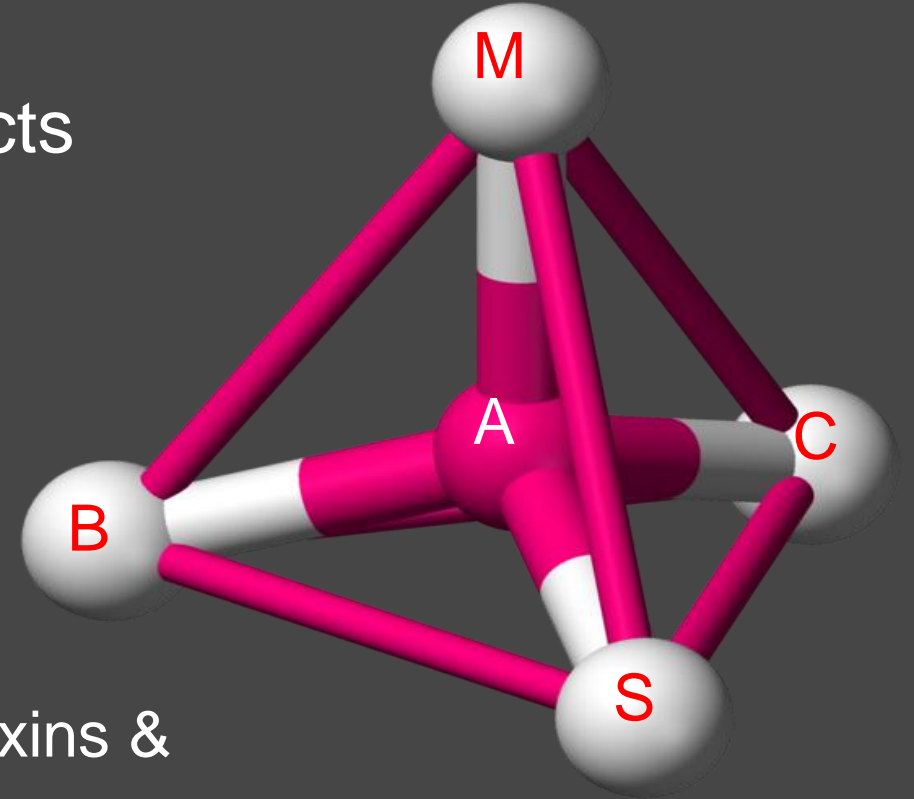


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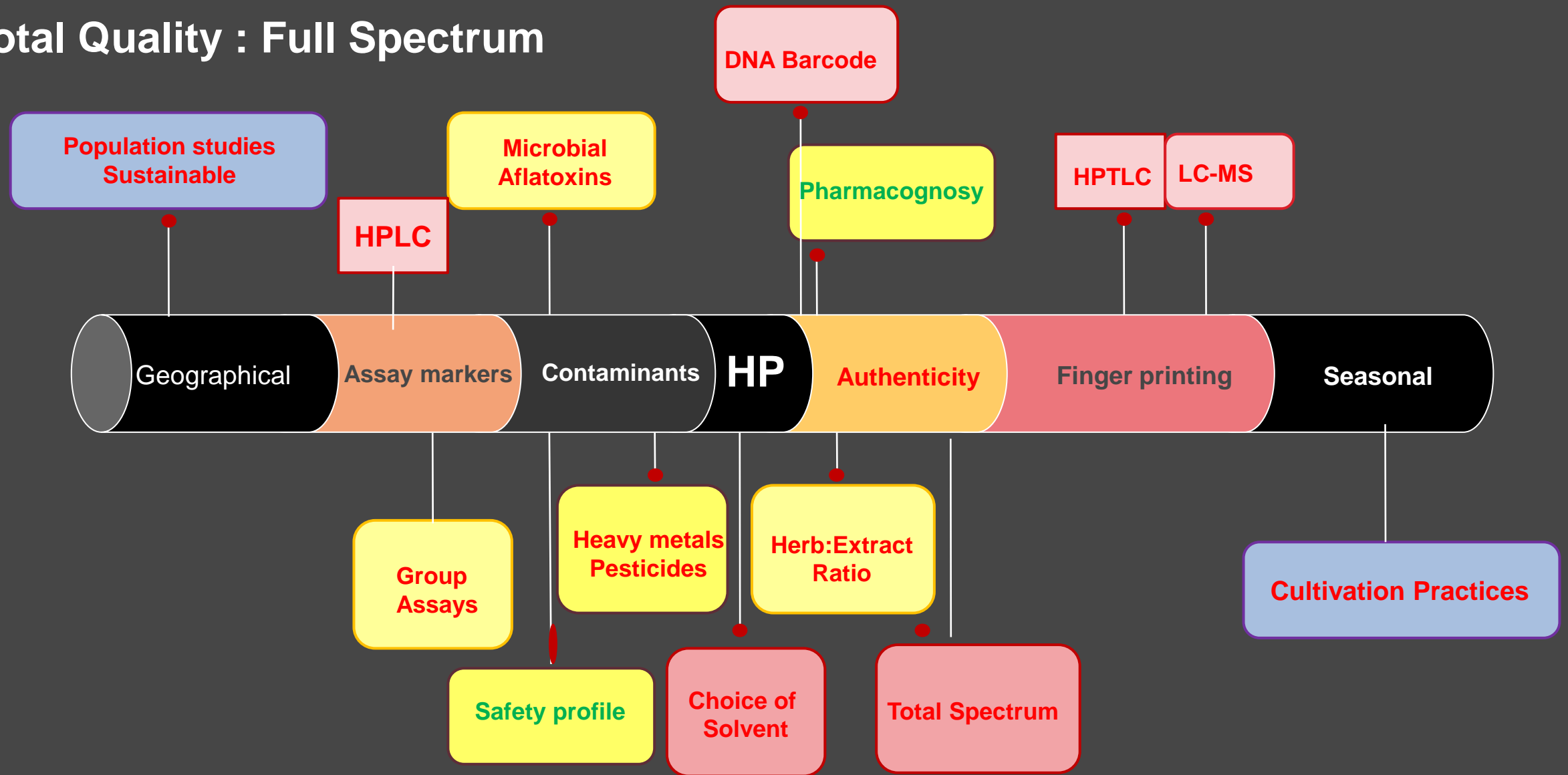
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The Quality of Medicinal Plants & Products

- Authenticity, Herb-Extract Ratio & GACP
- Manufacturing facilities & Reproducibility
- Bioactive/Analytical markers & Standardization
- Contaminants, Heavy metals, Pesticides, Aflatoxins & Solvent Residues
- Safety & Efficacy



Total Quality : Full Spectrum



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TISSUE CULTURE



Tissue culture of Ratna Purush, an endangered herb, at Himalaya's Lab and successful field trial

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BIOACTIVE
MARKER

ANALYTICAL
MARKER

BIOAVAILABILITY
ENHANCER

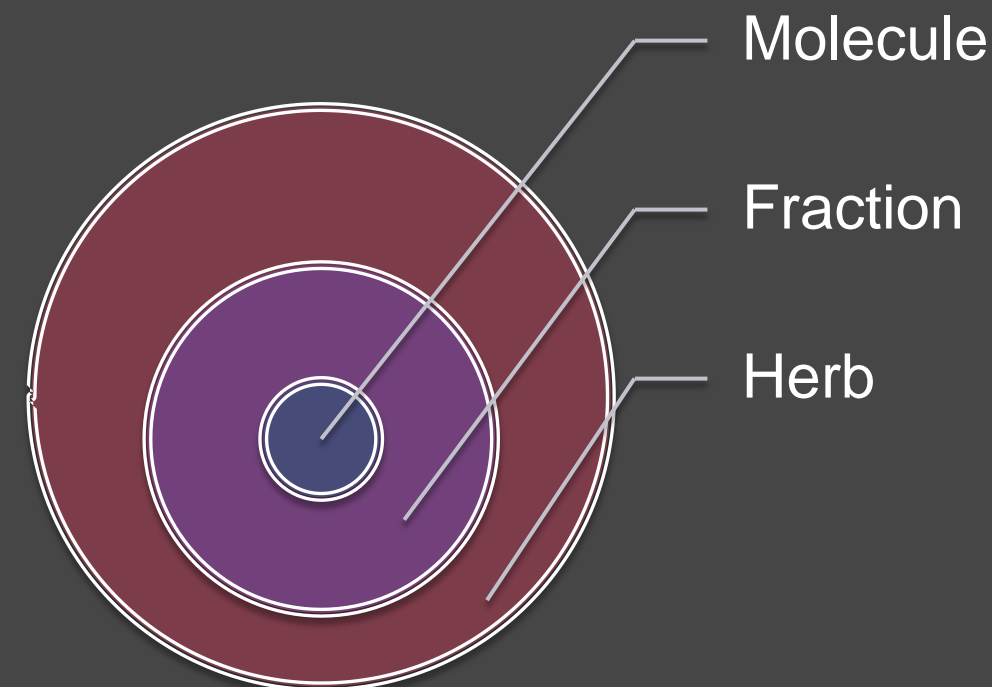
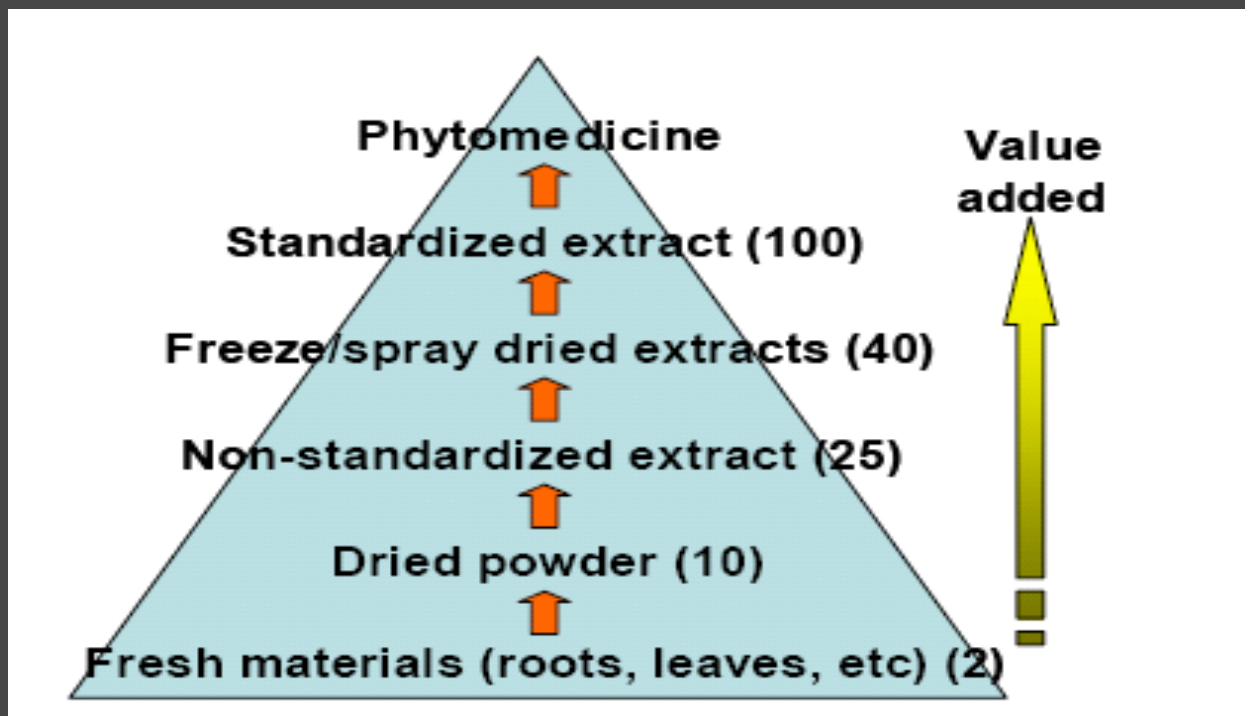
BINDER/
LUBRICANT

SELF
PRESERVATIVE

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Multiple
herbs

Multiple
compound
s

Multiple
targets

Single Herbs

Phytopharmaceuticals

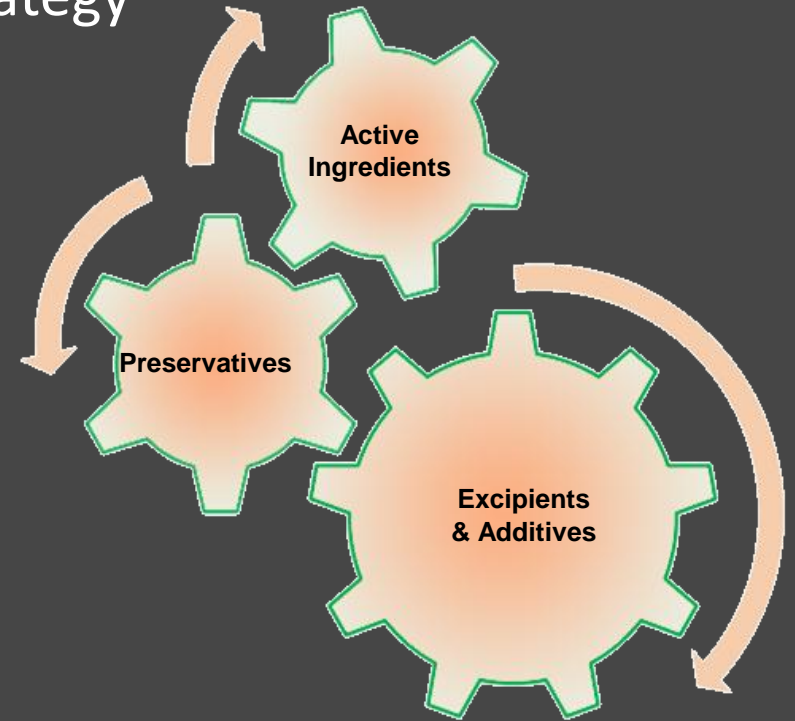
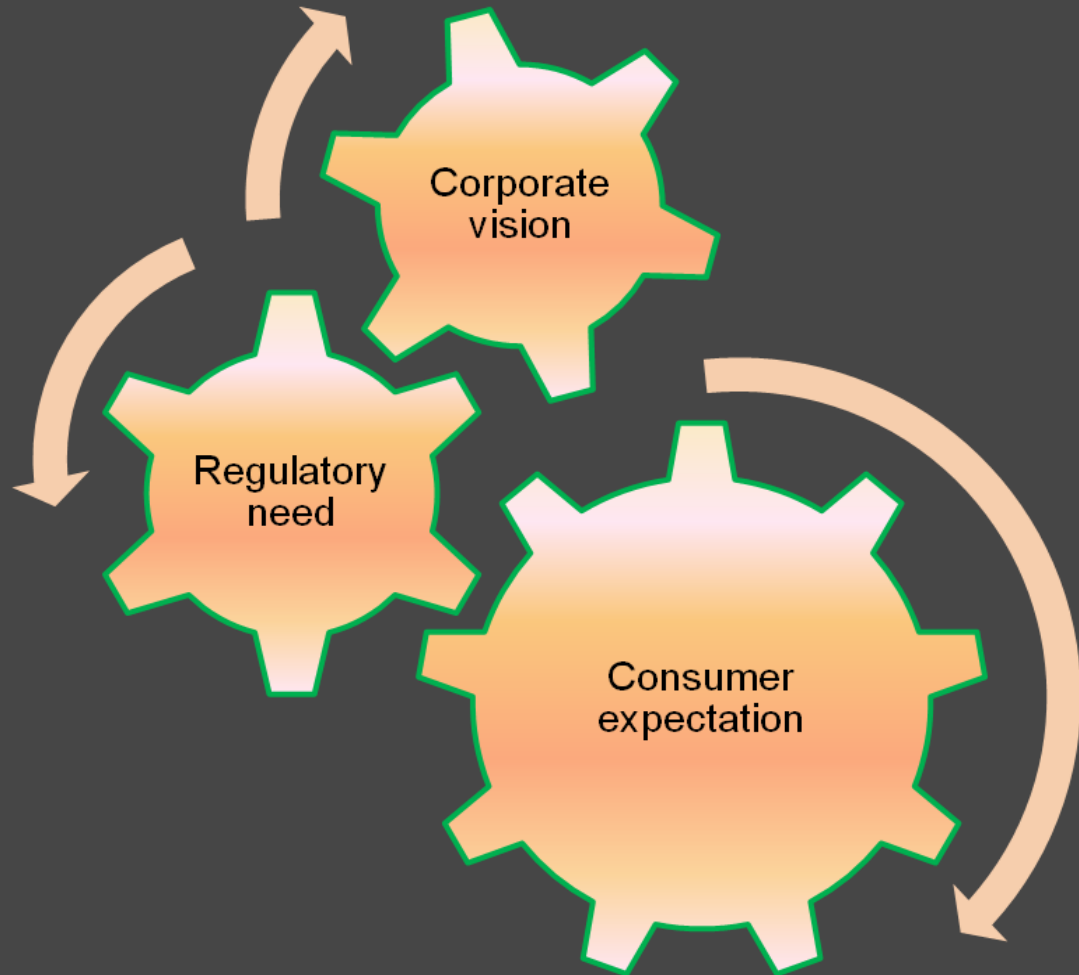
Classical Ayurvedic formulations

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Consumer Expectations : Win-Win Strategy



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NATURAL/
ORGANIC

SOLVENT
FREE

PRESERV
ATIVE/EX
CIPIENT
FREE

0%
DISCHAR
GE

BIODEGR
ADABLE

BIODIVER
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CONCER
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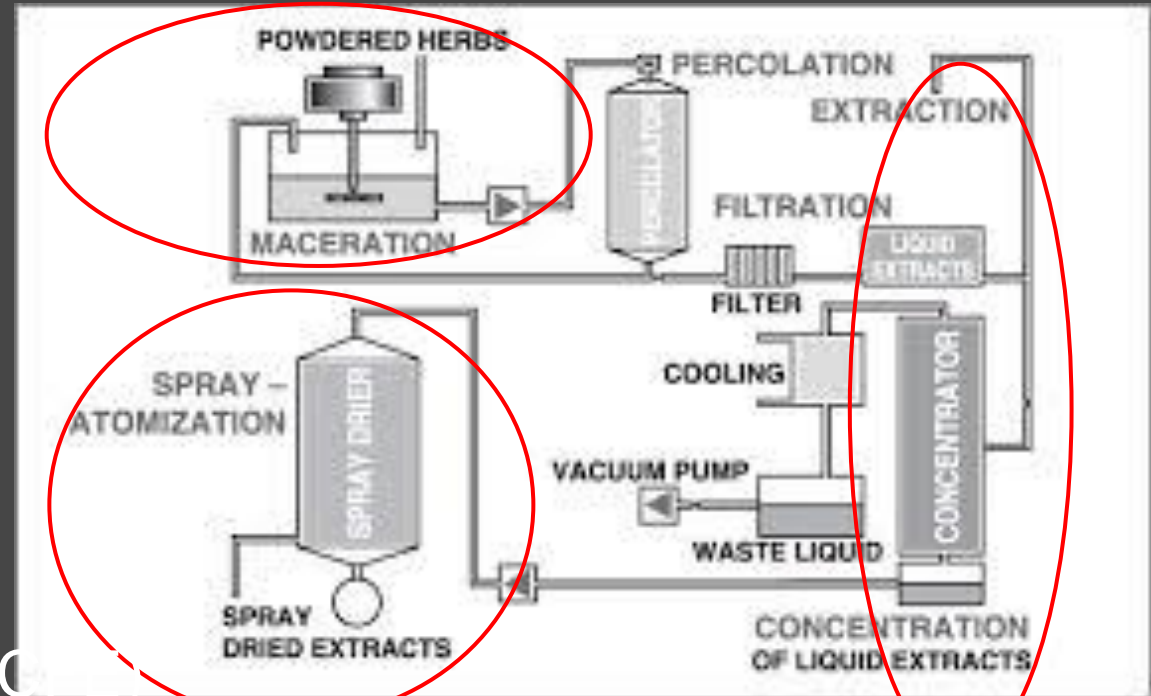
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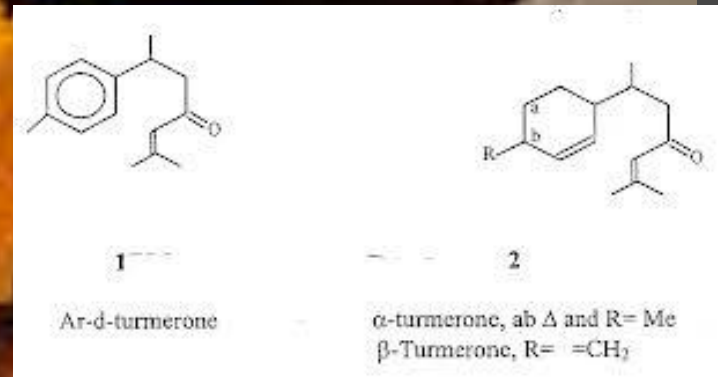
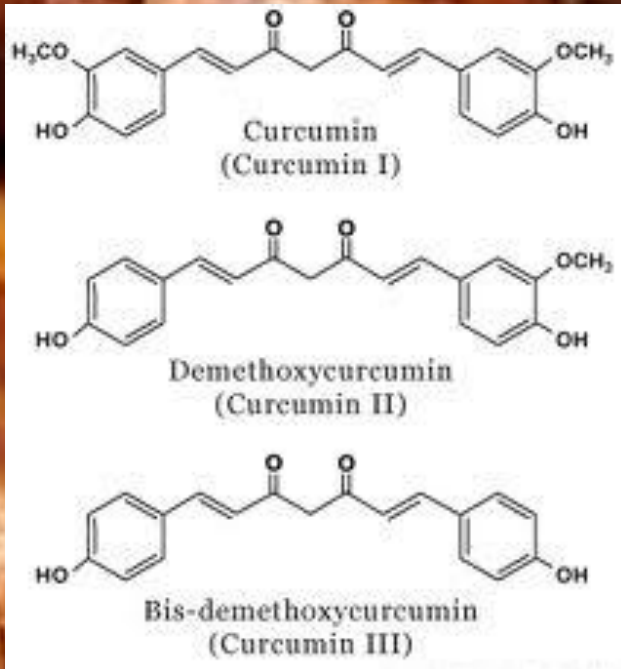

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Novel extraction technologies :

- Supercritical Fluid Extraction (SFE)
- Microwave Assisted Extraction (MAE)
- Accelerated Solvent Extraction (ASE)
- Ultrasound Extraction (USE)
- Subcritical Fluid Extraction (SFE)







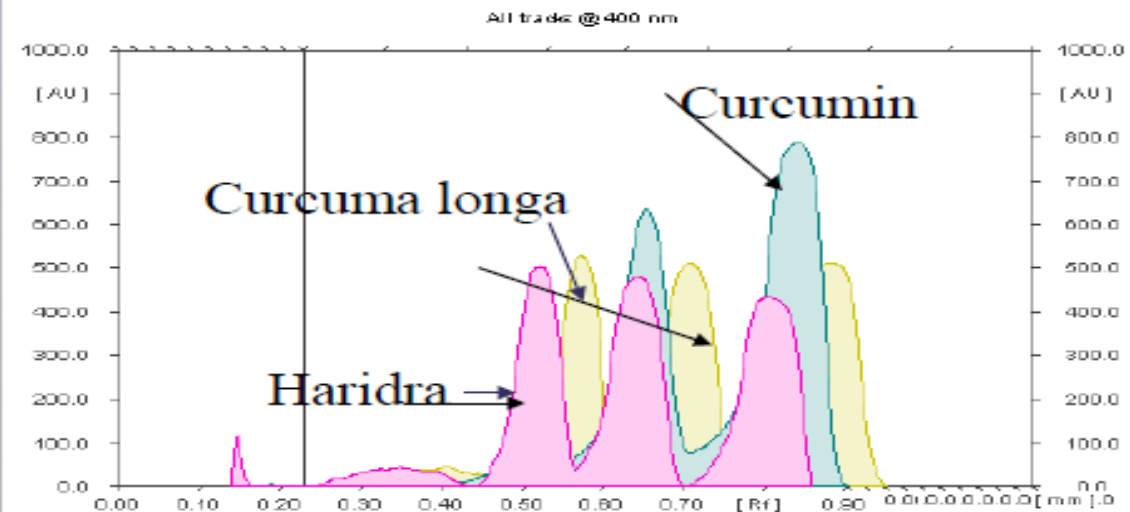
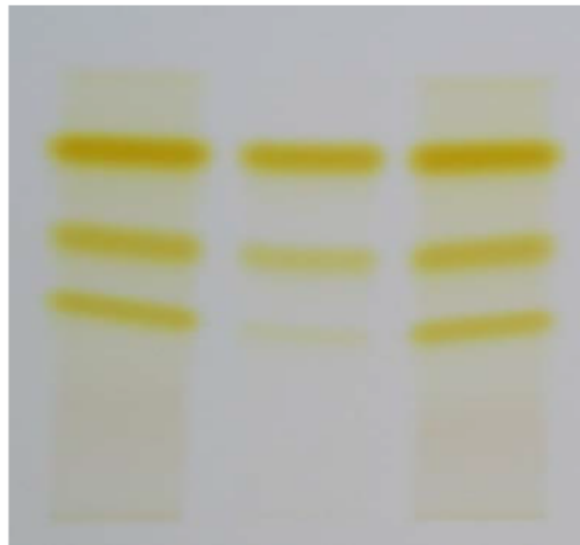
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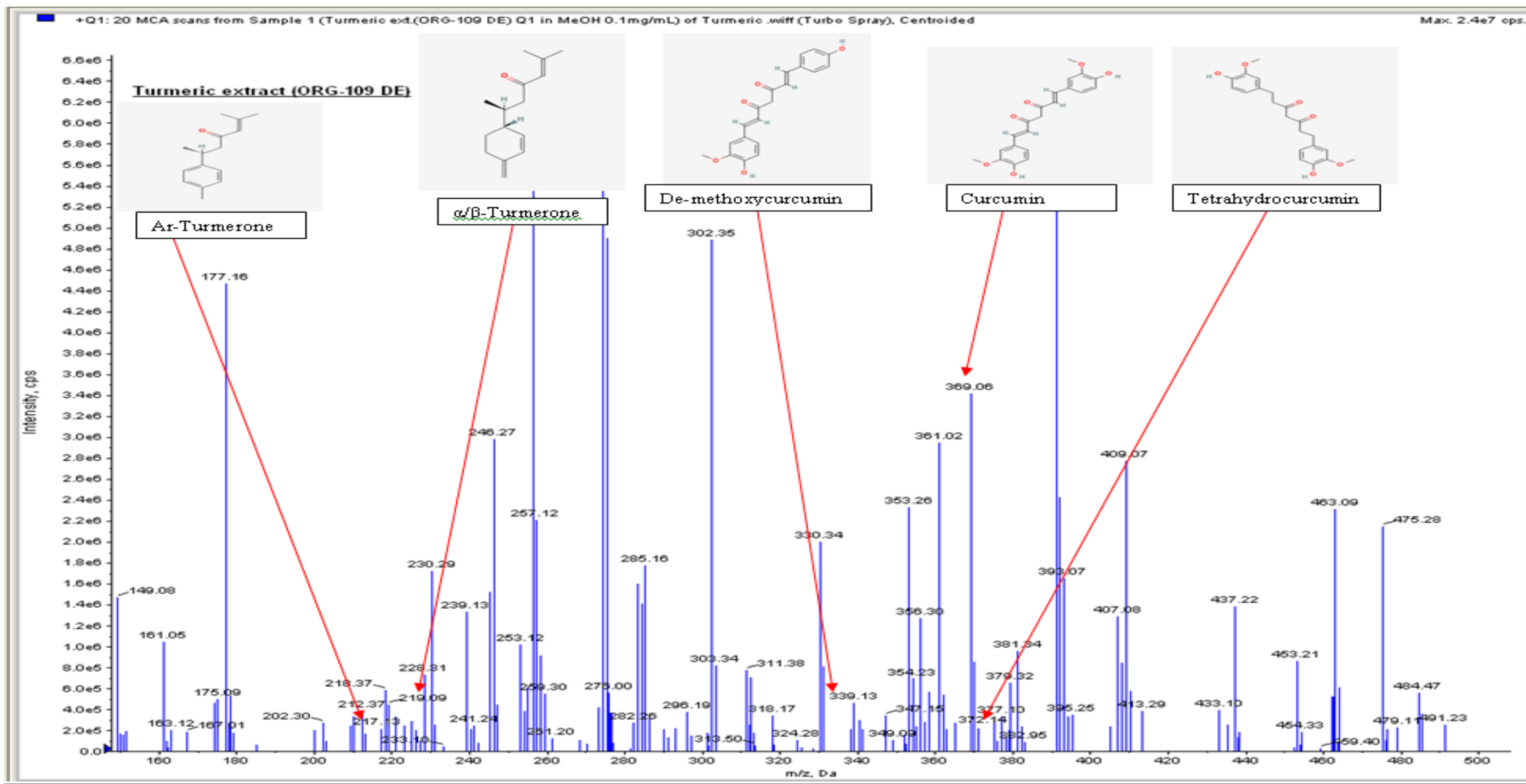
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Phytochemistry

➤ Turmeric – Curcumin - Haridra



Marker compound identified in Turmeric extract



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HOLISTIC APPROACH

BIOAVAILABILITY ENHANCER

TURMERIC -- SCFE -- TURMERONES -- CURCUMINOIDS

BINDER & LUBRICANT

Hardness 2-3 kg. DT =5 min and
Friability < 1%

Global Patent, 2009



BIOACTIVE

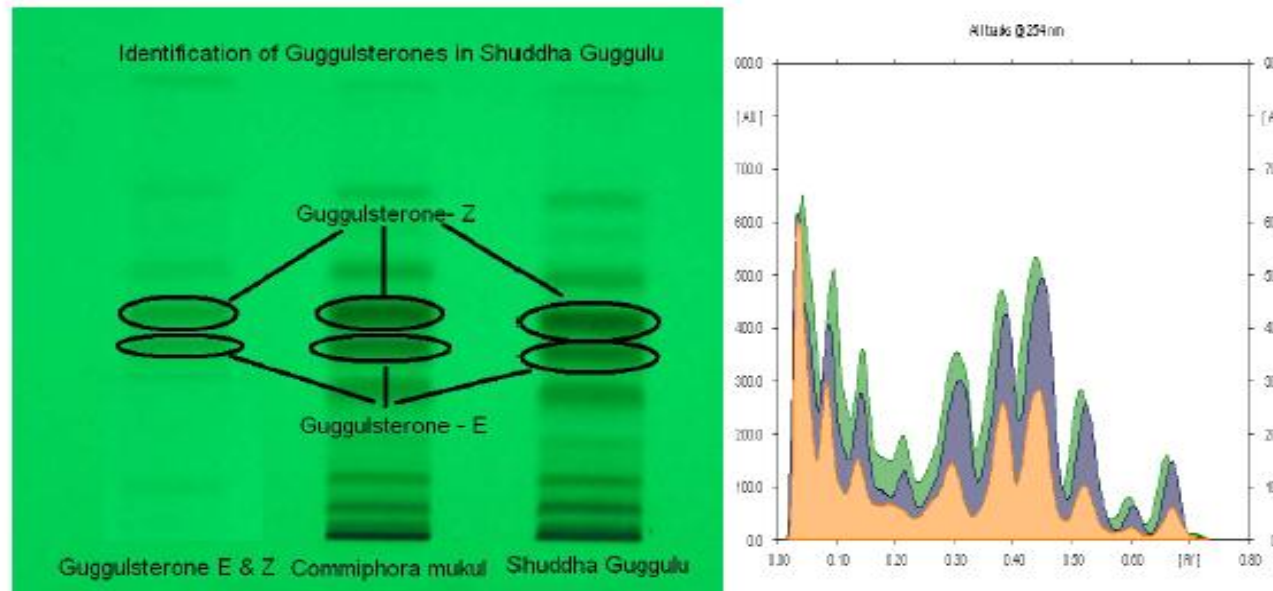
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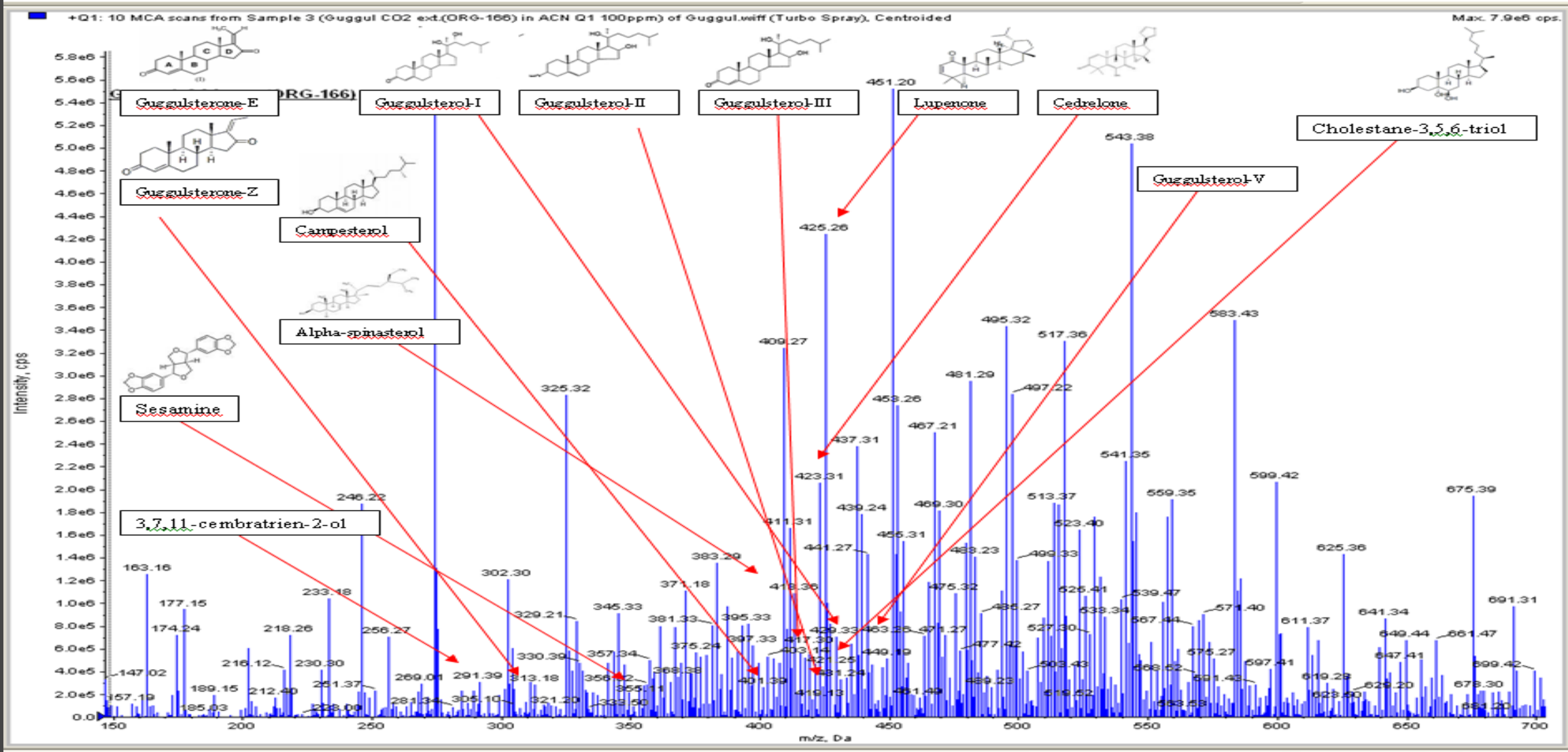
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Phytochemistry

➤ Guggulu – Guggulsterone – Shuddha Guggulu



Marker compound identified in guggul CO₂ extract



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ORGANIC PURE HERBS

Range of 22 organic Pure Herbs in tablet form

100% USDA certified organic products

Excipient & preservative free

Advanced super critical fluid extraction

Highly enriched active markers

Global patent filed



A new day is dawning...

ADDITIVE FREE

USDA ORGANIC

Himalaya PURE HERBS

Certified USDA Organic • ADDITIVE FREE • Easy-to-Swallow Caplets

Amla C natural antioxidant	Bitter Melon glycemic control	Gotu Kola memory enhancer	Mucuna nervine tonic
Andrographis immune support	Garcinia lipid control	Guduchi immunomodulator	Neem system purifier
Arjuna cardiac tonic	Garlic coronary support	Gymnema sugar destroyer	Shatavari female tonic
Ashwagandha anti-stress	Ginger digestive comfort	Holy Basil natural antioxidant	Trikatu gastric support
Bacopa mental alertness	Gokshura urinary comfort	Licorice gastric comfort	Triphala colon cleanser

• Our new additive free caplets contain nothing but 100% herbal extracts.
 • No Magnesium Stearate or any other fillers and binders.

From the makers of LiverCare™/Liv.52®

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Winner of Better Nutrition's Best of Supplements Award 2009!



Better Nutrition's second annual review of the very best natural supplements.

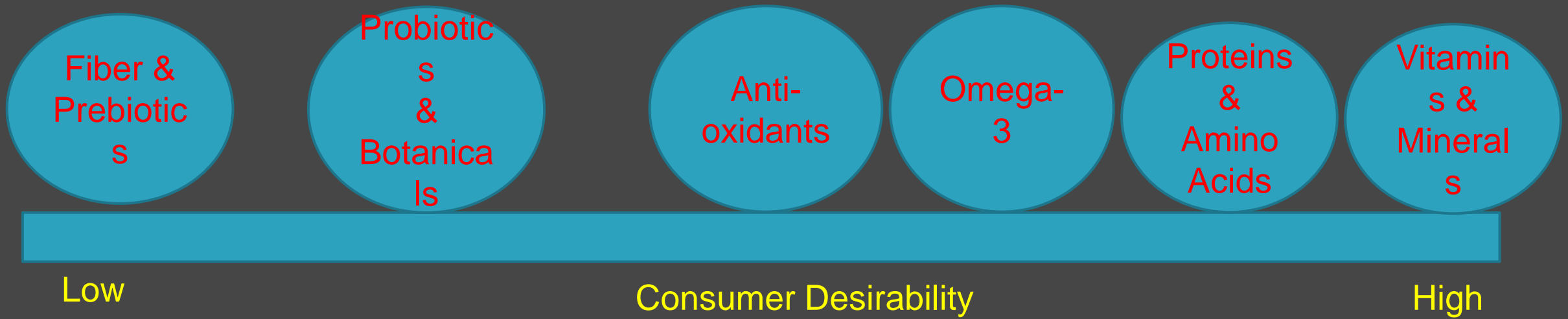
"Himalaya's Ashwagandha is fantastic for helping your body deal with stress or extra physical demands."

– Better Nutrition November 2009

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Major Nutraceutical Ingredients

Vitamins	PUFA/ specialty lipids	Phyto- Chemicals	Prebiotics	Minerals	Amino acids, peptides proteins	Fibers
<ul style="list-style-type: none"> • Vit. C • B1, B2, B6, B12 • Folic acid • Niacin • Biotin • Panthothenic acid • Vit. A • Vit. E • Vit. K • Vit. D • β-Carotene 	<ul style="list-style-type: none"> • DHA/EPA • ARA • GLA • CLA • Structured lipids 	<ul style="list-style-type: none"> • Phytosterols • Isoflavones • Lignans • Polyphenols (from berries, olive, tea, tomato, apple, grape, cocoa) • Tocotrienols • Isothiocyanates 	<ul style="list-style-type: none"> • FOS • Inulin • GOS • Poly-dextrose • Other oligo-saccharides (XOS, SOS) 	<ul style="list-style-type: none"> • Calcium • Magnesium • Zinc • Iron • Sodium • Potassium • Selenium 	<ul style="list-style-type: none"> • Arg, Glu, Lys • Leu, Ile, Val • Lactoferrin • Immuno-globulins • Bioactive peptides • Digestive enzymes 	<ul style="list-style-type: none"> • Inulin • Poly-dextrose • Beta-glucan • Resistant starch • Gums such as guar gum • Pectins • Resistant maltodextrin • Psyllium • Insoluble

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Carotenoids	Polyols	Probiotics	Others
<ul style="list-style-type: none"> • β-Carotene • Lycopene • Lutein • Zeaxanthin • Astaxanthin 	<ul style="list-style-type: none"> • Xylitol • Lactitol • Isomalt • Maltitol 	<ul style="list-style-type: none"> • Lactobacilli • Bifidobacteria • Other cultures 	<ul style="list-style-type: none"> • CoQ10 • Glucosamin • Chondroitin • Lipoic acid • Inositol

Global top 10 selling drugs in 2016

Drug	Primary indication	Marketer	Sales (\$m)	Growth (%)
Humira	Arthritis	AbbVie	16,078	+14.7%
Harvoni	Hepatitis C	Gilead Sciences	9,081	-34.5%
Rituxan/MabThera	Non-Hodgkins lymphoma	Roche	7,411	+1.1%
Revlimid	Multiple myeloma	Celgene	6,974	+20.2%
Remicade	Arthritis	Johnson & Johnson	6,966	+6.2%
Avastin	Cancer	Roche	6,886	-0.9%
Herceptin	Cancer	Roche	6,885	+1.3%
Lantus	Diabetes I	Sanofi	6,321	-10.9%
Enbrel	Arthritis	Amgen	5,965	+11.2%
Pprevnar	Pneumococcal vaccine	Pfizer	5,718	-8.4%

Source: Hardman & Co Life Sciences Research

**CARDIOVASCULAR
DISEASES**



OMEGA
EPA & DHA

CoQ 10


POLYCOSANOL

PLANT STEROLS,
FENUGREEK

LYCOPENE

ARJUNA, GARLIC, GUGGUL, FENUGREEK,
SAWPALMITO, GINSENG & GINKGO

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**WEIGHT
MANAGEMENT &
OBESITY**



GARCINIA

GREEN TEA


**BITTER
ORANGE**

**FIBRES, PROTEINS, FATTY
ACIDS**

FORSKOLINE

SALACIA, NIGELLA, LICORICE

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COGNITIVE &
SLEEP



OMEGA
EPA & DHA


ANTIOXIDANTS

AMINO ACIDS

MELATONIN

ASHWAGANDHA, BRAHMI,
VALERIANA

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BONE & JOINTS

OMEGA-3

MINERALS

AMINO
ACIDS


ANTIOXIDANTS

PROTEIN

TURMERIC, BOSWELLIA,
HADJOD



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DIABETES



OMEGA-3

CHROMIUM


MAGNESIUM

GREEN TEA, AMLA

CINNAMON

BITTER MELON, GYMNEMA,
FENUGREEK, PTEROCARPUS

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CANCER



GINSENG

CO Q 10


SELENIUM

GREEN TEA, AMLA

LYCOPENE

TURMERIC, GARLIC,
ECHINACEA, WHEAT GRASS

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The Untapped Potential of India Herbs : Nutraceuticals & Functional Foods

SINCE 1930

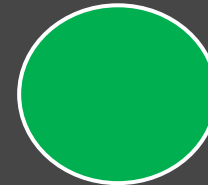
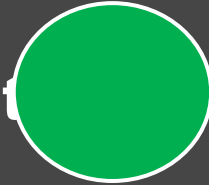
MARKET DRIVERS – NUTRACEUTICALS

EU

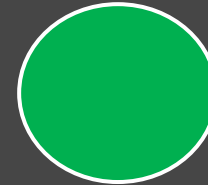
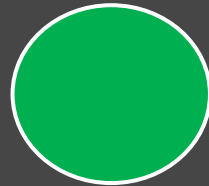
USA

INDIA

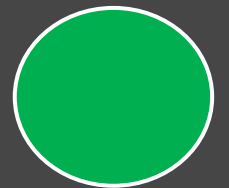
➤ Increasing Cost of Health Care



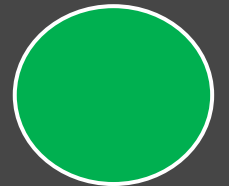
➤ Ageing Population



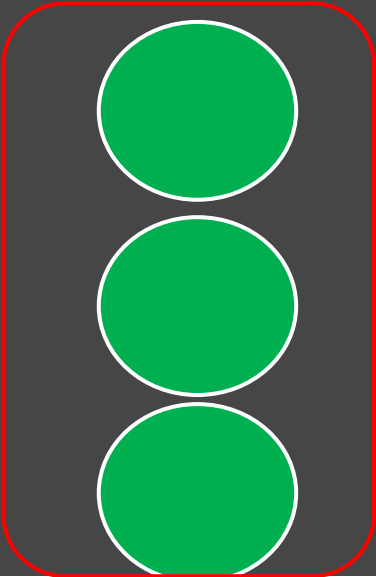
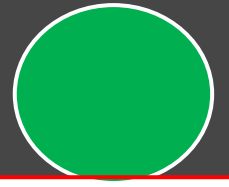
➤ Increasing Consumer Health Awareness



➤ Increase in Disposable Income



➤ Natural Sourcing



RESTRAINTS- NUTRACEUTICALS

EU

USA

INDIA

➤ Slow pace of Regulatory approval



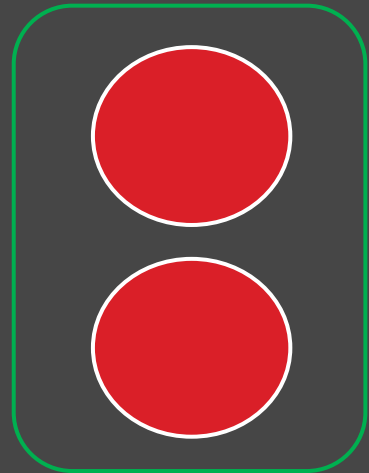
➤ High cost of Product Development and maturing market



➤ Lack of Regulatory frame work to validate health claims



➤ Inadequate investment in Nutritional and Food Research



STRENGTHS

- Huge Opportunity for growth driven by changing urban life style.
- Younger Indian population with significant nutritional deficiency.
- There is history of Ayurveda and health enhancing products in natural way.
- GMP practices and experience base in Pharma, food and beverage industry.

OPPORTUNITIES

- To position local remedies to fully branded.
- Consumer & Stake holder opinion education through communication.
- Ease of doing business index.
- Sports related nutraceuticals will have major impact on consumer health as fitness enthusiasts

WEAKNESSES

- Nature of market fragmented both from demand and supply perspective.
- A kind of niche market.
- Lack of will to reinvent already existing rituals/practices which could develop into big brand.
- Lack of information to prove efficacy/benefit.

THREATS

- Spurious Products & Brands.
- Most nutraceutical products branded as premium so limits its scope to Urban market.
- Lack of stake holders support.
- Adulteration.

growing
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ACADEMIA AND INDUSTRY COLLABORATION – A MUST

- ❖ Agriculture
 - Plant biotechnology
 - Chemical engineering
 - Extraction technology
 - Food technology & preservation
 - Fermentation technology
 - Microbial technology
 - Enzyme technology
 - Delivery systems & biodegradable packaging



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Thank you and keep well!

If any queries, mail me:
dr.babu@himalayawellness.com

*Costus (Kushtha) – The essential oil of roots
has strong antiseptic, disinfectant and
anti-inflammatory properties. Used in Purim*



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