

Herbs as Health Food:

Nutraceuticals:

Nutraceuticals is defined as a substance which can be considered a food or its part which in addition to its normal nutritional value provide health benefits including prevention of disease or promotion of health.

Therapeutic applications:

They used to improve health, delay the aging process, prevent chronic diseases, increase life expectancy or support the structure or function of the body.

The major disease for the preparation and or treatment where of nutraceuticals have been associated are heart disease, cancer, hypertension and diabetics.

Antioxidants:

- Antioxidant nutraceuticals are those which contain vitamin E, Vitamins C, Vitamin A, and beta carotene.
- They are present in some fixed oils, fruits, vegetables and fishes.
- Antioxidants present in such food are those compounds which either prevent the formation of oxygen free radicals or trap them (Scavenging effect).
- The body defence system against the oxidative damage consists of enzymes such as superoxide dismutases, glutathione peroxidase, catalase and the reducing agent such as glutathione ascorbate and iron.
- Anti-oxidants of oxidation are compounds which retard or prevent the oxidation and in general prolong the life of the oxidizable matter.

Therapeutic applications:

- It is used in treatment of stroke.
- It is used in antioxidants therapy in cancer.
- They protect from heart disease, cancer, anxiety and depression etc.

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Pro-biotics:

- These are the living microorganisms which when taken with or without food improve the intestinal microbial balance and in turn functioning of the large intestine.
- These microorganisms exert their efforts by producing substances and conditions which inhibit the growth of harmful bacteria in the large intestine.
- Pro-biotics include bifidobacterium and Lactobacilli species such as L. acidophilus.

Therapeutic Applications:

- It is used in diarrhoea, colon cancer, allergy and cardiovascular disease.

Prebiotics:

- They are the nutraceuticals which promotes the flourishing of probiotics.
- The probiotics microorganism have to survive the digestive enzymes and acids in the upper gut.
- To overcome this problem nutraceuticals in the form of prebiotics are available.
- Prebiotics are the food substance which reach to colon in intact form without getting depleted by gastric pH and digestive acids.
- Prebiotic was described as “a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, and thus improves host health”.

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Therapeutic Applications:

- Probiotics have been shown to promote health benefits in many diseases related to an unbalanced GIT microbiota.
- Inflammatory bowel disease is a chronic, multifactorial disorder caused by inflammation of the GIT that may induce severe watery and bloody diarrhea accompanied by abdominal pain.
- Irritable Bowel Syndrome
- Helicobacter pylori Infection

Dietary Fibers:

- Fibers are non-digestible polysaccharides found in the plant cell walls.
- They are present in food including fruits, vegetables, grains and legumes.
Thus fibers which we eat are called dietary fibres.

Type of dietary Fibres:

They are two types.

1. Soluble dietary fibres: Soluble fibres are partially soluble in water and form gel.

2. Insoluble dietary fibres: Insoluble fibres are insoluble in water and pass through the digestive tract largely intact.

<i>Source of dietary fibres</i>		
S.No	Soluble dietary fibres	Insoluble dietary fibres
1.	Oat-meal	Whole-wheat
2.	Nuts	Carrots
3.	Seeds	Cucumbers
4.	Apples	Barley
5.	Pears	Brown rice

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Requirment dose:

- Adult- 30gm/day
- Child - 5 gm/day

Therapeutic applications:

- Fibre has important therapeutic effects on the gastrointestinal tract, and several common disorders that affect North Americans are associated with a low intake of dietary fibre (as well as with the amount of fat in the diet and the extent of exercise taken).

Omega-3 fatty acids:

Biological Source:

- These are found in cold water fishes like cod, salmon, tuna, sardines blue fish, marc kevel and herring.
- These are also reported in cold weather bean-oil plants like flax seed, canola, walnuts, soyabean and freshly ground wheat germ.

Therapeutic applications:

- Omega 3 fatty acids have been found to be useful due to their following activities:
- Suppression of smooth muscle cell proliferation and migration.
- Reduction of LDL and VLDL levels. Decrease in hypercholesteremia and triglyceridaemia.
- Increase in HDL levels.

Spirulina

- It is a Microscopic plant which grows in fresh water (planktonic form)
- Spirulina is a concentrated source of food containing nutraceuticals and contains anti-oxidants, probiotics and phytonutrients.

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Biological Source:

- Spirulina is a blue green algae *Spirulina platensis* or *Spirulina maxima*

Family: Oscillatoriaceae

Biological role :

- Spirulina has immuno-stimulant activities.
- It stimulates the production and activity of bone marrow stem cells, macrophages and T-cells. Spleen and thymus gland shows enhanced function.
- In-vitro studies on spirulina indicate that it enhances cell nucleus enzyme activity and DNA repair and hence it has possible role in cancer treatment.

Therapeutic applications:

- Spirulina is simple and has fast growth rate since cultivation of spirulina can be undertaken even in waste water, this helps to solve the problem of water pollution.
- Spirulina grows well in sewage water which is best material for biodegradations.

Soya (Soya bean)

Biological Source:

- These are the fully matured dried seeds of the plant *Glycine-soja* and *Glycine max*.

Family: Leguminosae

Biological role:

- Soya contains low proportion of saturated fat, but is a rare source amongst plants containing omega-3 fatty acids.

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- It contains no cholesterol but helps to lower blood cholesterol levels.

Therapeutic applications:

- Dietary fiber is present in soybean in high quantities. Dietary fiber is essential for total body functioning and plays a vital role in the digestive system.
- Soybean contains isoflavones in abundance, which is a vital component of the female reproductive system. When women reach menopause, they experience a drastic drop in estrogen levels.
- Soybeans are a good source of healthy unsaturated fats (with 2 grams MUFA and 5.06 grams PUFA) that can help you lower your cholesterol in the body.

Garlic (*Allium sativum*)

Family: Liliaceae

- It has been associated with humans and their food since ancient times.
- It is grown and used as food and medicine in all temperate climatic region of the world.
- It contains carbohydrates, protein, high amount of phosphorus, potassium and calcium.

Therapeutic applications:

- It reduces serum lipids levels because it causes
 - A. Reduction or inhibition of lipogenesis
 - B. Enhancing break down and excretion of lipids.
- Garlic show antibiotics activity against mycobacterium tuberculosis, Staphylococcus aureus and S. faecalis.
- Garlic is useful in the treatment of amoebic dysentery and parasites like tapeworm and hook worm.