Shoolini University

ESU 009 – Nutraceuticals compounds

Lecture 5

Examples of Foods with Higher Content of Specific Nutraceutical Substances

Nutraceutical Substance/Family	Foods of Remarkably High Content
Allyl sulfur compounds	Onions, garlic
Isoflavones (e.g., genestein, daidzein)	Soybeans and other legumes, apios
Quercetin	Onion, red grapes, citrus fruit, broccoli, Italian yellow squash
Capsaicinoids	Pepper fruit
EPA and DHA	Fish oils
Lycopene	Tomatoes and tomato products
Isothiocyanates	Cruciferous vegetables
β-Glucan	Oat bran
CLA	Beef and dairy
Resveratrol	Grapes (skin), red wine
β-Carotene	Citrus fruit, carrots, squash, pumpkin
Carnosol	Rosemary
Catechins	Teas, berries
Adenosine	Garlic, onion
Indoles	Cabbage, broccoli, cauliflower, kale, brussels sprouts
Curcumin	Tumeric
Ellagic acid	Grapes, strawberries, raspberries, walnuts
Anthocyanates	Red wine
3-n-Butyl phthalide	Celery
Cellulose	Most plants (component of cell walls)
Lutein, zeaxanthin	Kale, collards, spinach, corn, eggs, citrus
Psyllium	Psyllium husk
Monounsaturated fatty acids	Tree nuts, olive oil
Inulin, Fructooligosaccharides (FOS)	Whole grains, onions, garlic
Lactobacilli, Bifidobacteria	Yogurt and other dairy
Catechins	Tea, cocoa, apples, grapes
Lignans	Flax, rye

Note: The substances listed in this table include those that are either accepted or purported nutraceutical substances.

Inorganic Mineral Supplement

- **Calcium**
- **Magnesium**
- **Manganese**
- **Boron**
- **Copper**
- **Zinc**
- **Phosphorus**

VITAMINS

Fat Soluble Vitamins

- **Vitamin A:** Acts as **antioxidant,** essential for **growth and development,** maintains healthy vision, skin and mucous membranes, may aid in the prevention and treatment of certain cancers and in the treatment of certain skin disorders.
- **Vitamin D:** Essential for **formation of bones and teeth,** helps the **body to absorb and use calcium.**
- **Vitamin E:** Antioxidant, helps to **form blood cells,** boost immune system.
- **Vitamin K:** Essential for **blood clotting**

Water soluble vitamins

Vitamin C: Antioxidant, necessary for **healthy bones, gums, teeth and skin.** Helps in **wound healing**, prevent from **common cold**.

Vitamin B1 (Thiamine): Helps in **carbohydrate metabolism,** essential for **neurological function.**

Vitamin B2 (Riboflavin): Energy metabolism, maintain **healthy eye, skin** and **nerve function.**

Vitamin B3 (Niacin): Energy metabolism, brain function.

Vitamin B6 (Pyridoxine): Helps to produce **essential proteins**, convert **proteins to energy**

Vitamin B12 (Cobalamins): Help in **producing genetic material, formation of RBC, maintenance of CNS, synthesis of amino acids, involved in metabolism of protein, fat and carbohydrate.**

Probitics

- **Live microorganisms** which, when administered in adequate amounts, confer a **health benefit on the host**
- Species of *Lactobacillus*
- *Bifidobacterium*
- *yeast Saccharomyces cerevisiae*

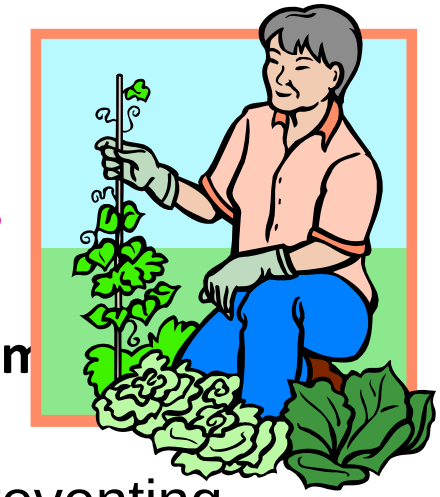
Prebiotics

Nondigestible substances that provide a beneficial physiological effect for the host by selectively **stimulating the favorable growth** of a limited number of indigenous bacteria.

Commonly known prebiotics are:

- **Oligofructose**
- **Galacto-oligosaccharides**
- **Lactulose**

HERBS



- **Aloe vera: Anti-inflammatory, emollient, wound healing,**
- **Garlic: Antibacterial, antifungal, antithrombotic, antiinflam**
- **Ginger: carminative (**relieving flatulence**), antiemetic (**preventing vomiting**), treatment of dizziness.**

VARIOUS PHYTOCHEMICALS

Phytochemicals	Source	Role
Tocotrienols & tocopherols	Grains	**Suppressed the growth** of diverse **tumors cell**
Carotenoids	Fruits & vegetables	Antioxidants, protects against prostate, colorectal, lung and digestive tract cancers

Limonoids	Citrus fruits	Provide protection to lung tissue.
Phytosterols	Various plants	Exhibit anti-inflammatory, decrease cholesterol.
Phenolic constituents	Various plants, wholegrain	Antioxidants, lowers the risk of CHD, diabetes, hypertension etc.

Flavonoids	Grapes, wines	Action against free radicals, free radicals mediated cellular signaling, inflammation, allergies
Catechin & gallic acids	Grapes, berries, cocoa, green tea,	Antioxidants, free radical scavenging ability.
Isoflavonoids	Soybeans	Treating cancers & osteoporosis

Anthocyanidins	Fruits & flowers	**Antioxidants** & **anti-mutagenic** properties
Glucosinolates	Cruciferous	Activators of **liver, detoxification enzymes**
Fiber	Various vegetables, fruits,	Protects against **colorectal** diseases,

DIETARY FIBRE

- Structural carbohydrate of plants
- Neither digested nor absorbed
- Insoluble fibers - Predominant
  - Absorbs water in gastrointestinal tract
  - Promotes regular elimination
  - Increases stool weight
  - Speeds up digestion/elimination time
- Soluble fibers - Health benefits
  - Lowers serum cholesterol
  - Regulates blood sugar levels

Thank you

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