

ESU 009 – Nutraceuticals & functional foods applications and there health benefits

Lecture 4



- A nutraceutical is any substance considered as a **food**, or its part which, in addition to its normal which, in addition to its normal nutritional value **provides health benefits** including the **prevention of disease or promotion of health**.
- It is **“any non-toxic food component that has scientifically proven health benefits, including disease treatment or prevention”** .
- The functional component of the food must be **standardized** in the nutraceutical product and produced under good manufacturing practices (GMPs).

Food As.....Medicine

- Nearly two thirds of the world's 6.1 billion people rely on the **healing power of plant based materials** for many reasons- **availability, affordability, safety** or their belief in traditional affordability, or belief in **traditional cures**.
- Medical benefits of food have been explored for thousands of years Modern nutraceutical industry **began to develop during the 1980s.**



Nutraceuticals mainly consists of ...

1. Nutrients: Substances which have established Nutritional functions e.g. Vitamins, Minerals, Amino Acids, Fatty acids, etc.
2. Herbals/ Phytochemicals: Herbs or Botanical products.
3. Dietary Supplements: Probiotics, Prebiotics, Antioxidants, Enzymes, etc.



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.

| | | | | |
|---------------------------|-----------------------|----------------------|------------------------|--------------------------|
| Capsaicin | β -Glucan | CLA | Linolenic acid | CLA |
| Genestein | γ -Tocotrienol | Ascorbic acid | EPA | Soy protein |
| Daidzein | δ -Tocotrienol | β -Carotene | DHA | Genestein |
| α -Tocotrienol | MUFA | Polyphenolics | GLA | Daidzein |
| γ -Tocotrienol | Quercetin | Tocopherols | (gamma-linolenic acid) | Calcium |
| CLA | ω -3 PUFAs | Tocotrienols | | Casein phosphopeptides |
| Lactobacillus acidophilus | Resveratrol | Indole-3-carbonol | Capsaicin | FOS |
| Sphingolipids | Tannins | α -Tocopherol | Quercetin | (fructooligosaccharides) |
| Limonene | β -Sitosterol | Ellagic acid | Curcumin | Inulin |
| Diallyl sulfide | Saponins | Lycopene | | |
| Ajoene | Guar | Lutein | | |
| α -Tocopherol | Pectin | Glutathione | | |
| Enterolactone | | Hydroxytyrosol | | |
| Glycyrrhizin | | Luteolin | | |
| Equol | | Oleuropein | | |
| Curcumin | | Catechins | | |
| Ellagic acid | | Gingerol | | |
| Lutein | | Chlorogenic acid | | |
| Carnosol | | Tannins | | |
| L. bulgaricus | | | | |

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Thank you

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