**Neutraceuticals - An approach towards Medicine and Health**

Sreeja J ¹, D Divya Raj ², Aisha Shabna Kamal ³, Anu Sreedevi ⁴, Vimala K S ⁵, Raiby P Paul ⁶

**Abstract**

Neutraceuticals is a broad umbrella term which includes both food and part of a food which emphasize on maintaining and restoring health. So it bridges the gap between food and medicine. The most usual nutraceuticals are nutrients, herbals, dietary supplements, functional food and natural chemicals derived from different medicinal plants. Here this review mainly focus on to analyse the nutraceuticals, its role in medicine and health, advantages and disadvantages along with its Ayurvedic perspective.

Key words: Nutraceuticals, dietary supplements

¹, ², ³ & ⁴ PG Scholar, ⁵ Professor, ⁶ Assistant Professor, Department of Dravyaguna Vigyana, Amrita School of Ayurveda, Amrita University, Kollam, Kerala.

**CORRESPONDING AUTHOR**

Dr. SREEJA J
PG Scholar, Department of Dravyaguna Vigyana, Amrita School of Ayurveda, Amrita University, Kollam, Kerala.
Email: sreeder360@gmail.com
INTRODUCTION

Nowadays lifestyle disorders are more common. The main reason behind this is unhealthy food habits. Food plays decisive role in development, sustenance, reproduction and termination of life. Food has been placed as an important tool for human beings, in health as well as diseased state. So a nutrition based foods and food products have a significant role in improving the health status. Nutraceuticals is a branch of phytomedicine and the term was coined from nutrition and pharmaceuticals in 1989 by Stephen Defelice, Founder and Chairman of Foundation for innovation in medicine, an American organization which encourages medical health. According to him, a nutraceutical is any substance that is a food or a part of food and provides medical or health benefits, including the prevention and treatment of disease. Such products may range from isolated nutrients, dietary supplements and specific diets to genetically engineered designer food and herbal products.

History:
The concept of nutraceuticals was started from the survey in U.K, Germany and France and it concluded that diet is rated more highly by consumer than exercise or hereditary factors for achieving a good health. Nutraceuticals are food or food ingredients that provide medical or health benefits. However, now the term nutraceutical as commonly used in marketing and has no regulatory definition.

Classification:
Based upon food source:
Food source Examples
1. Plants - Ascorbic acid, cellulose, lutein, gallic acid, quercetin, pectin, betacarotene.
3. Microbes - Bifidobacterium bifidum, B.longum, Lactobacillus acidophilus.

Based upon mechanism of action:
1. Anticancer – Capsaicin, alpha tocotrienol, gama tocotrienol, conjugated linolenic acid, glycyrrhizin, curcumin, ellagic acid, lutein.
3. Antinflammatory – linolenic acid, quercetin, curcumin, catechin, tannins, gingerol.
4. Osteogenetic or Bone protective – Soy protein, calcium, inulin, daidzein

Based on chemical nature:

<table>
<thead>
<tr>
<th>Component</th>
<th>Source</th>
<th>Potential benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carotenoids</td>
<td>Carrots, fruits, vegetables</td>
<td>Neutralizes free radicals which may cause damage to cells.</td>
</tr>
<tr>
<td>Dietary fibre</td>
<td>Oats, wheat</td>
<td>May reduce risk of CVD, Ca breast, colon cancer.</td>
</tr>
<tr>
<td>Fatty acids</td>
<td>Fish</td>
<td>May reduce risk of CVD, Improve mental and visual function.</td>
</tr>
<tr>
<td>Flavonoids</td>
<td>Fruits</td>
<td>Neutralises free radicals, may reduce risk of cancer.</td>
</tr>
<tr>
<td>Plant sterols</td>
<td>Corn, soy wheat</td>
<td>Lowers blood cholesterol level by inhibiting cholesterol absorption.</td>
</tr>
<tr>
<td>Saponins</td>
<td>Soy beans, soy foods</td>
<td>May lower LDL cholesterol, anti-cancer activity.</td>
</tr>
<tr>
<td>Phytoestrogens</td>
<td>Soy beans, soy foods</td>
<td>May reduce menopause symptoms such as hot flashes.</td>
</tr>
<tr>
<td>Tannins</td>
<td>Cocoa, cranberries</td>
<td>May improve urinary tract health.</td>
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Nutraceutical is a broad umbrella term. The most common nutraceuticals are nutrients, herbs, dietary supplements, functional food and natural chemicals derived from different medicinal plants.

1) Nutrients:
Nutrients are of 2 types Macro and Micro nutrients. Macronutrients are proteins, fats and carbohydrates which are called proximate principles because they form main bulk of food. Micronutrients are vitamins and minerals they are called so because they are required in small amounts. The most commonly known nutrients are antioxidants, vitamins and essential minerals. Antioxidants are substances which retard or prevent deterioration, damage or destruction caused by oxidation and it form an integral part of the nutraceutical market. The phyto-nutrients are unique substances occur naturally in plants, have been found to hold specific and powerful disease preventing possibilities.

2) Herbs:
Numerous nutraceuticals are present in medicinal herbs as key components. In addition to the macro and micro nutrients such as proteins, fats, carbohydrates, vitamins or minerals necessary for normal metabolism, a plant based diet contains numerous non-nutritive phyto constituents which may also play an important role in improving the health status.
role in health enhancement. Examples of some common medicinal plants used as traditional herbal nutraceuticals are *Allium sativum*, *Aloe vera*, *Emblica officinalis*, *Citrus lemon*, *Cassia senna*, *Curcuma longa*, *Linum usitatissimum*, *Moringa oleifera*, *Vitis vinifera* etc.

3) Dietary supplements:
It contains all products that can be purchased by the consumer without any prescription. Many potential benefits have been attributed to antioxidant use in the form of dietary intake or supplementation. Dietary supplements contain vitamins, minerals, herals or amino-acids, all aimed to add to or supplement the diet of an individual.[xviii] They are not intended to be taken alone as a substitute to any food or medicine.

4) Functional food:
When food is being cooked or prepared using scientific intelligence with or without knowledge of how or why it is being used, the food is called functional food.[xix] They are consumed as a part of normal diet. They may be used as conventional or fortified foods with bioactive components to reduce disease risk.

5) Phytochemicals:
Phytochemicals are naturally occurring biochemical that gives plants their colour, flavour, smell and texture which may help to prevent diseases [xx]. They all have specific actions and can be used variously.
Ex:1) Allicin from *Allium sativum* - it is a powerful antifungal and antibacterial. It has been shown to be an antioxidant and has been used to treat serum cholesterol.
2) Curcumin & curcuminoids from *Curcuma longa*: Up to date research indicates that curcuminoids have a powerful antioxidant action, anti-inflammatory function, circulatory and immune support. Curcumin has the capacity to clear brain plaque caused by Alzheimer’s disease.
3) Ellagic acid from strawberries, pomegranates, and red raspberry seeds to prevent cancer.

**Advantages of nutraceuticals:**
1. Connects the line between food and medicine.
2. Can be used for the prevention, treatment or cure of a condition or disease.
3. Reduced side effects with desirable outcomes.
4. Improve health.
5. Delay ageing.
6. Increases life expectancy.

**Disadvantages:**
1. Not subjected to same testing and regulations as pharmaceuticals.
2. Companies creating unregulated products to create a wide profit margin.
3. Bioavailability of nutrients is lower.

**Nutraceuticals & Ayurveda**
The concept of nutraceuticals is gaining more popularity in recent years its roots can be traced back to ancient Indian system of medicine like Ayurveda. Ayurveda considers ahara as mahoushadha. Ayurveda prayo- janas are Swastyamarakshana and Vikara prasamana. For vikara prasamana ahara, vihara and oushadha are considered as important. So nutraceuticals play a key role for swastyasamrakshana and Vikaraprasamana. The concepts of Ajasrika rasayanas, ahara kalpanas and pathyas deals with food products can also be incorporated with the concepts of nutraceuticals in Ayurveda.

**Research & Development:**
Use of nutraceuticals in sports medicine application is appealing. Many scientists believe that enzymes represent another exciting frontier in nutraceuticals. They are going to be a hot area in the future. The greatest scientif- ic need in nutraceuticals pertains to standardization of compounds to carefully develop and execute clinical studies [xxi]. To develop testing methods for ensuring and verifying the consistency of the dosage of ingredients included in the company’s products.

**CONCLUSION**

Nutraceuticals has a remarkable role in promoting the global health status and now it emerge as an important part of the food industry. It provides a wide application in controlling the life style disorders such as obesity, diabetes, cancer and cardiovascular diseases. A nutrition based food and food products will lead us into a new area of medicine and health. So nutraceuticals connect the gap between food and medicine. Clinical research studies and standardisation techniques are necessary to scientifically accept it in various medical conditions and surely it promotes the future demand of nutraceuticals also.
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Source of Support: Nil.
Conflict of Interest: None declared.

How to cite this article: Sreeja et.al.: Neutraceuticals - An approach towards Medicine and Health. AAMJ 2016; 4: 854 – 857