

Assessing India's Nutraceuticals and their Impact on Disease Prevention

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Abstract: "Nutraceutical," a word derived from "nutrition" and "pharmaceutical" was found to be a potential nutritional and safety profile that has many health benefits in human lifestyle. The use of nutraceuticals for food, nutrition, and pharmaceutical purposes has gained popularity, particularly in India, as a practical way to maintain maximum health. Since 2500-500 BC, the acceptance of modern nutraceuticals in India has been influenced by the popularity of Ayurveda, the traditional Indian medical system. The numerous varieties of Indian medicinal plants that were noted as being useful for health are evaluated as far as how they relate to various illness prevention in this review article.

Keywords: Nutraceuticals; diseases; medicinal plant; Ayurveda.

Introduction:

The term "nutraceutical" refers to an invention that has been purified from food, is typically offered in pharmaceutical forms unrelated to food, and has been exposed to provide physiological benefits or to offer protection from chronic disease. In 1989, Dr. Stephen De Felice proposed the term "nutraceutical," which he derived from the words "nutrition" and "pharmaceutical." Nutraceuticals potential nutritional and safety profile of nutraceuticals has recently attracted significant research, in addition to their medicinal potential. The advantages of these compounds have changed consumer habits, and pharmaceutical and nutritional industries are aware of this. Most nutritional supplements offer a multiplicity of health benefits. (Das et al., 2012) Particularly in India, there has been an increase in the recognition of nutraceuticals as a practical means of preserving optimal health. The popularity of Ayurveda, the traditional Indian medical system, has contributed to the acceptance of contemporary nutraceuticals in India. Ayurveda, which has its origins in herbal sciences, has long advocated the use of botanicals like ashwagandha, Triphala, and others as well as products like Chyavanprash, which has fortified nutrients intended to improve a person's overall health. Due to its therapeutic and nutritional benefits, foods like turmeric, chillies, and garlic have been a part of Indian cuisine for millennia. Additionally, in recent years, fortified goods like salt and Vanaspati with vitamin A have been made available in the market. (Fernandes et al., (2019).

Classification of Nutraceuticals

Nutraceuticals have been categorized into a broad spectrum according to their purposes and origination sources. These sources offer a range of health advantages, some of which come straight from natural sources such as herbs, chemicals, and microorganisms. (Chanda et., Al. 2019)

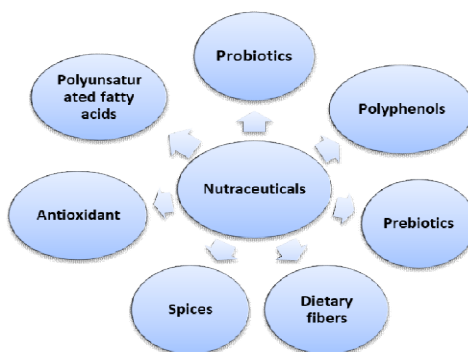


Figure 1: Classification of nutraceuticals

Nutraceuticals in India and its disease prevention role: India is renowned for its powerful traditional medical systems, or "AYURVEDA," which focus on human health and illness. "AYURVEDA" means "science of life." Around 20,000 medicinal plants with nutraceutical potential and uses as treatments for diseases traditionally have been revealed and recorded in India. (Panday et al., 2013)

Benefits of uses of traditional nutraceuticals in health

- Improve health value
- Have no or minimal adverse effects on the body's health system
- Be easier and less expensive to obtain than other conventional treatments
- Nature is full of resources economically poor people can benefit from.
- Food-based therapies don't require an uncomfortable ingesting technique
- Effectiveness in bodily detoxifying, restoring healthy digestion without vitamin or mineral deficit. (Chauhan B et al., 2013)

Indian nutraceuticals in disease prevention: (Ahmad S et al., 2021)

Indian medicinal plant	Types of Diseases
<i>Centella asiatica</i> <i>Bacopa monnieri</i> <i>Clitoria ternatea</i> <i>Evolvulus alsinoides</i> <i>Desmodium gangeticum</i>	Alzheimer's disease: Alzheimer's disease (AD) is known as the general type of dementia. According to the clinical result, AD is found to be incurable which ultimately leads to the end of life. Diagnosed mostly in elderly patients that are more than 60-65 of age. Nutraceuticals like antioxidant-rich compounds like turmin, and curcumine believe that they delay AD such as dementia in recent times. (Nasri et al., 2014)
<i>Zingiber officinale</i> <i>Piper longum</i> <i>Withania somnifera</i> <i>Phyllanthus emblica</i> <i>Curcuma longa</i>	Cardiovascular disease: Cardiovascular disease (CVD) is one of the most severe and common diseases globally where the blood vessels and heart are affected like heart attack due to coronary heart plague formation, strokes (hypertension) failure of heart proper functioning, and so on. Indian-origin medicinal plants like <i>Zingiber officinale</i> , <i>Piper longum</i> , <i>Withania somnifera</i> , <i>Phyllanthus emblica</i> , <i>Curcuma longa</i> , etc found to be a cure for CVD (Hu, F, and Willett 2002)
<i>Mucuna pruriens</i> <i>Piper longum</i> <i>Withania somnifera</i> <i>Phyllanthus emblica</i>	Parkinson's disease: Parkinson's disease (PD) is related to the Central nervous system (CNS) where healthy neurons get degenerative known as a neurodegenerative disease where neurotransmitter dopamine-producing cells get destructive in the brain of substantia nigra due to unidentified reasons. Patience shows symptoms like body movement associated with shaking, rigid body, and trouble with walking. Few nutraceuticals are used to cure PD like mention medicinal plants. (Anwar et al., 2007)
<i>Andrographis peniculata</i> <i>Cassia occidentalis</i> <i>Cordia myxa</i> <i>Curcuma longa</i> <i>Cynodon dactylon</i>	Weak Immune: Immune system plays a very significant role in the human body to protect against any harmful substance which can cause disorders. It is important to keep the body's immune system strong, a weak immune system can lead to harm to the body. Nutraceuticals are very effective in the immune-boosting system and help fight against the disease. (Limer et al., 2004)
<i>Atropa belladonna L.</i> <i>Coptis teeta wall.</i> <i>Foeniculum vulgare mill.</i> <i>Gingko Biloba</i> <i>Zingiber officinate</i>	Eye disorders: The eye is one of the most important sense organs of the body due to many conditions, eye can be dysfunctional like myopia, glaucoma, night blindness, and so on. A nutritious diet like having food rich in vitamin A, and antioxidants appears to be beneficial in eye-related disorders. (Brookmeyer et al., 2007)

<i>Azadiracta indica</i> <i>Bauhinia variegata</i> <i>Crataeva nurvala</i> <i>Terminalia chebula</i> <i>Holarrhene antidysenterica</i>	Cancer: a progressive cell proliferation, facing worldwide main health problems which leads to death in the most cases due to multi reasons, cancer rising each year globally and is very expensive in terms of treatment. Proper maintenance of a well way of life and diet can help in the anticipation of cancer. (Willis et al., 2003)
<i>Acacia catechu</i> <i>Adhatoda vasica</i> <i>Aegle marmelos</i> <i>Anacyclus pyrethrum</i> <i>Carica papaya</i>	Anti-inflammatory activities: The prime reason for cell harm is what triggers inflammation as a defensive reaction. Both acute and chronic inflammation are recognized. Acute inflammation is the body's initial defense against injuries, infections, and physical and chemical threats that hasten the healing of wounds. This process enters a chronic phase if it occurs repeatedly. By reducing the overexpression of cell adhesion molecules, inhibiting the activation of NF-B, blocking the overexpression of tumor necrosis factor and interleukin-1, inhibiting phospholipase A2, COX-2, 5-LOX, iNOS, and myeloperoxidase, decreasing the activity of ROS-generating enzymes and increasing the capacity to scavenge ROS, nutritional supplements have anti-inflammatory effects. (Inan, S. 2020)
<i>Gymnema sylvestre</i> <i>Tinospora Cordifolia</i> <i>Azadiracta indica</i> <i>Phyllanthus emblica</i>	Diabetes: Diabetes is now a very common disease compared to earlier, it has two types Diabetes 1 and Diabetes 2 type 2 is major related to obesity, natural remedies are found to be effective in the treatment of diabetes in a cost-effective manner like using bitter melon juice and curry leaves found to maintain the glucose level of the body. (Momeni A. 2012).
<i>Jatropha curcas</i> <i>Mollugo cerviana</i> <i>Nigella sativa</i> <i>Ocinum sanctum</i> <i>Phyllanthus emblica</i>	Allergy: Allergic conditions occur due to a hypersensitivity reaction of the body's immune system where extreme activation of mast cells takes place which activates antibodies, resulting in severe itching, redness, inflammation, fever, cough, and uneasiness to the body. The natural product found in nature is evidenced to treatment in allergic reactions in the body like medicinal plant <i>Jatropha curcas</i> , <i>Mollugo cerviana</i> , <i>Nigella sativa</i> , <i>Ocinum sanctum</i> and <i>Phyllanthus emblica</i> . (Grammatikos 2008)
<i>Piper longum</i> <i>S. xanthocarpum</i> <i>Terminalia chebula</i> <i>Curcuma zedoaria</i> <i>Phyllanthus emblica</i>	Osteoarthritis: Osteoarthritis (OA) is an inflammatory, degenerative disorder that affects the cartilage in the joints. Pain, stiffness, and a decreased range of motion in the arthritic joints are the hallmarks of this inflammation. In the long run, these symptoms may increase the chance of being overweight or obese, developing diabetes mellitus, and experiencing falls and fractures. Local biochemical hazard factors include joint damage, joint space, and physical activity, including sex, age, comorbidities like obesity, and nutritional disorders. (Colletti et al., 2021)

Conclusion: All the components that should be in a human's diet for good health are included in nutraceuticals. According to the study mentioned above, it is possible to obtain a variety of chemical components from India because our country is found to be geographically rich in fertile soil and natural sources and can prepare them into an array of optimal, secure, and stable formulations for the dealing and diagnosis of diseases with no any adverse effects, beneficial for the people, and economically valuable for the entire nation.

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