

NEUTRACEUTICALS – AN AGE-OLD CONCEPT

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ABSTRACT

In the present-day scenario, the concept of Nutraceuticals is gaining much momentum. The adverse reactions of certain medicines are forcing the mankind to search for an alternative system of medicine which promises them good health in a natural way with minimum or no side effects. Ayurveda has laid foundation for the concept of Nutraceuticals thousands of years back in the form of *Pathya* and *Apathya*. Our ancient Acharyas had listed *pathya* and *apathya* for almost all the diseases. Nutraceuticals is the term coined for a substance which has both nutritional and health benefits. The *Rasayanas* described in our Indian system of medicine occupies the prime place among Nutraceuticals. Most of the drugs enlisted in our ancient system of medicine can be considered as the present day Nutraceuticals due to their dual benefits of nutrition and health. In this paper, a few of the drugs with their pharmacological actions, nutritional values and research studies have been described in detail.

Keywords: Nutraceuticals, *Pathya*, *Apathya*, *Rasayanas*.

INTRODUCTION

Ayurveda considered diet as one of the important factor and a therapeutic measure for several diseases in the form of *pathya* and rightly considered food as *MAHA BHAISHAJYA* –The best curative measure among all (*Kashyapa Samhita-Khila*.) Taking good food is not sufficient. Having a good appetite is equally impor-

tant. When the digestive capacity is good, the food undergoes good metabolism, nourishes all the tissues and thereby promotes an overall development. If the food is not digested properly, the undigested food particles accumulate as toxins. i.e. *ama* and this *ama* is the main cause for almost all the diseases.

“Prevention is better than cure” Wholesome diet always keeps us healthy. During the diseased condition *pathya* is very important as a person may not need any medication if he is on *pathya*. A person who is ill and does not follow *pathya*, the medicines alone are of no use to him. Only medication without *pathya* will not cure the disease.

A Nutraceutical is defined as “food that is designed to improve health and lower the risk of disease”¹. In the modern science, the concept of Nutraceutical came into existence when Iodine was added to salt to prevent goiter.

The concept laid down many hundred years ago is being accepted now-a-days. The fundamentals described in Ayurvedic classics prove effective today on scientific grounds in almost every aspect. One such concept is food as medicine in the form of *pathya* and i.e. the modern nutraceutical. Hence, Nutraceutical is a new term coined to an age-old concept. Most of the herbal drugs and formulations in our Indian system of medicine include drugs possessing both therapeutic as well as nutritional values.

AIMS AND OBJECTIVES

- i. To establish the nutraceutical effect of certain Ayurvedic drugs with the help of modern research
- ii. To explore the efficacy of age old concepts with respect to modern research

DISCUSSION

Food or diet is the most important media to maintain and promote the harmonious functioning of the body. Ayurveda considered food as *PRANA* i.e. life as the physical growth and psychological development depends on food.

Our appearance, intellect, voice, psychological strength and even our existence is attributed to food.

Ayurveda enlisted certain rules and regulations in the consumption of food.

- a. *Shadrasopeta ahara*²: Our diet should be a blend of all the six *rasas*. If we confine our diet to a single *rasa* for a long time, then we are prone to many diseases. Excess consumption of *madhura* *rasa* *Ahara* (sweet) may prone to diseases as *prameha*, *atis-thoulya*. Similarly, *amla* *rasa* (sour) may lead to skin and eye diseases. Excess consumption of *lavana* *rasa* (Salt) may lead to diseases of early ageing. Similarly, *katu* *rasa* (Spicy) may lead to infertility, *tikta* (Bitter) *rasa* to weakness and *kashaya* *rasa* to abdominal diseases.
- b. Quantity of food³: The quantity of food should neither be too meager or too excess. Imagine our stomach to be divided into 3 parts. One for the solids, one for the liquids and the other should be free for the movement of *vata*. This not only helps in good digestion of the food but also helps the gases to move downwards.
- c. Eat unctuous and warm food.⁴
- d. Eat only after the previous food is digested.⁵
- e. Avoid eating food too fast.⁶
- f. Avoid contradictory foods.⁷
- g. Eat with concentration.⁸

The food items that are harmonious to our body and do not cause any disturbance in their functions are grouped under *PATHYA*, and the foods that are unpleasant to the body are said to be *APATHYA*. Many such nutraceuticals are given to us by our ancient *Acharyas*.

A few of them are enlisted below.

1. **AMALAKI** (*Emblca officinalis*): Considered as the best among all the fruits in vedic literature⁹.

Therapeutic effects¹⁰: antidiabetic, antioxidant, immunomodulator and helpful in gastric disorders, eye diseases, Urinary diseases.

Nutritional value¹¹: Indian gooseberries (*Amla*) are exceptionally rich in vitamin C. 100 g of Amla carry astoundingly 445 mg of vitamin-C. However, their much of anti-oxidant properties come from other anti-oxidant compounds in them like tannins (*emblicanin*, *punigluconin*, *pedunculagin* etc). Fresh berries contain small amounts of essential vitamins such as pyridoxine (vitamin B-6), pantothenic acid (vitamin B5), folates, and thiamin (vitamin B-1). Furthermore, gooseberries contain moderate levels of minerals such as *copper*, calcium, phosphorus, manganese, magnesium, and potassium.

Research works¹²: Effect of *Amla* fruit on Blood glucose and lipid profile of normal subjects and type-2 diabetes-The result indicated a significant decrease in fasting and two hr post prandial blood sugar levels.

2. **LASUNA** (*Allium sativum*)

Therapeutic effects¹³: Immunomodulator, Aphrodisiac and antimicrobial. It is helpful in Rheumatoid arthritis, indigestion, cardiac diseases and obesity.

Nutritional values¹⁴: Its bulbs contain organic thio-sulfinate compounds such as *diallyl disulfide*, *diallyl trisulfide* and *allyl propyl disulfide*. Upon disruption of bulb (while crushing, cut-

ting, etc.), these compounds convert into allicin through enzymatic reaction. Laboratory studies show that allicin reduces cholesterol production by inhibiting the *HMG-CoA reductase* enzyme within the liver cells. *Alli-cin* decreases blood vessel stiffness through facilitation of nitric oxide (NO) release. Nitric oxide relaxes blood vessels and thereby, brings a reduction in the total blood pressure. Further, it blocks platelet clot formation and has fibrinolytic action inside the blood vessels. This function of allicin helps decrease the overall risk from coronary artery disease (CAD), peripheral vascular diseases (PVD), and stroke. Allicin and other essential volatile compounds also found to have anti-bacterial, anti-viral, and anti-fungal activities. Garlic is an excellent source of minerals and vitamins that are essential for optimum health. The bulbs are one of the richest sources of potassium, iron, calcium, magnesium, manganese, zinc, and *selenium*. Selenium is a heart-healthy mineral, and is an important cofactor for antioxidant enzymes within the body. Manganese is used by the body as a co-factor for the antioxidant enzyme, *superoxide dismutase*. Iron is required for red blood cell formation. It contains many flavonoid anti-oxidants like carotene beta, zeaxanthin, and vitamins like vitamin-C. Vitamin C helps the body develop resistance against infectious agents and scavenge harmful, pro-inflammatory free radicals.

Research works¹⁵: Compared ability of garlic extract or alpha tocopherol and magnesium association to reduce metabolic disorders and oxidative stress in diabetic rats– study showed a positive result.

3. HARIDRA (*Curcuma longa*) – Best drug in *prameha* by Vagbhata.¹⁶

Therapeutic effects¹⁷: Antilipidaemic, antiseptic, promotes complexion. It is useful in Diabetes, skin diseases and liver disorders.

Nutritional values¹⁸: The herb contains health benefiting essential oils such as *termerone*, *cur-lone*, *curumene*, *cineole*, and *p-cymene*. Curcumin, a poly-phenolic compound, is the principal pigment that imparts deep orange color to the turmeric. In vitro as well as in laboratory animal studies have suggested that the *curcumin* may have anti-tumor, antioxidant, anti-arthritis, anti-amyloid, anti-ischemic, and anti-inflammatory properties. This popular herb contains no cholesterol; however, it is rich in anti-oxidants and dietary fiber, which helps to control blood LDL or "bad cholesterol" levels. It is very rich source of many essential vitamins such as pyridoxine (vitamin B6), choline, niacin, and riboflavin, etc. 100 g herb provides 1.80 mg or 138% of daily-recommended levels of pyridoxine. Fresh root contains very good levels of vitamin-C. 100 of root compose of 23.9 mg of this vitamin. Turmeric contains very good amounts of minerals like calcium, iron, potassium, manganese, copper, zinc, and magnesium.

Research works¹⁹: Effects of *Curcuma Longa* on Post prandial plasma glucose and insulin in healthy subjects - *Curcuma* had a positive effect on insulin secretion.

4. MOOLAKA (*Raphanus sativus*)

Therapeutic effects²⁰: Appetizer, antidiarrhoeal. It is useful in Fever, sinusitis, cough.

Nutritional values²¹: Radish contains *isothiocyanate* anti-oxidant compound called sulforaphane. Studies suggest that sulfo-

raphane has proven role against prostate, breast, colon and ovarian cancers by its cancer-cell growth inhibition, and cyto-toxic effects on cancer cells. Fresh roots are good source of vitamin C; provide about 15 mg or 25% of DRI of vitamin C per 100 g. In addition, they contain adequate levels of folates, vitamin B-6, riboflavin, thiamin and minerals such as iron, magnesium, copper and calcium. Further, they contain many phytochemicals like *indoles* which are detoxifying agents and *zea-xanthin*, *lutein* and *beta carotene*, which are flavonoid antioxidants.

Research works²²: Anti-diabetic effect of RS roots juice - RS root juice possesses good hypoglycaemic potential coupled with anti-diabetic efficacy.

5. JATIPHALA (*Myristica fragrans*)

Therapeutic effects²³: Appetizer, aphrodisiac, antidiabetic, Mouth freshener. It is useful in cold, cough, acne.

Nutritional values²⁴: The spicy nut contains fixed oil *trimyristin* and many essential volatile oils such as which gives a sweet aromatic flavor to nutmeg such as *myristicin*, *elemicin*, *eugenol* and *safrole*. The other volatile-oils are *pinene*, *camphene*, *dipentene*, *cineole*, *linalool*, *sabinene*, *safrole*, *terpeniol*. This spice is a good source of minerals like **copper**, potassium, calcium, manganese, iron, zinc and magnesium. It is also rich in many vital B-complex vitamins, including vitamin C, folic acid, riboflavin, niacin, vitamin A and many flavonoid **anti-oxidants** like beta-carotene and cryptoxanthin that are essential for optimum health.

Nutmeg provides a range of vitamins, minerals and phytochemicals to the diet when consumed regularly. Nutmegs are a good source of

vitamin A, C, iron, manganese and copper. In addition, nutmegs also provide protein, omega-6 fatty acids, dietary fiber and aromatic oils such as myristicin, eugenol, elemicin and safrole. Up to 40 percent of nutmeg is made up of the essential oil.

Research works²⁵: AMP-activated protein kinase (Ampk) activators from MF and their anti-obesity effect - Nutmeg and its active constituents can be used not only for the development of agents to treat obesity and possible type-II diabetes but also may be beneficial for other metabolic disorders. All the modern researches had confirmed the anti-diabetic property of the above nutraceuticals.

CONCLUSION

Ayurveda concentrates in treating the diseases in a more natural way. Foods are such natural resources gifted to us by Nature. Such foods when used judiciously help us to add life to years instead of years to life. Much more researches must be encouraged to reveal the hidden treasures of Ayurvedic nutraceuticals.

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