



DESIGNER HERBAL FOODS-NEW HOPE TO IMPROVE HUMAN HEALTH

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ABSTRACT

Designer foods are conventional foods which have been fortified with ingredients which fight against deadly diseases. Now-a-days people eating habit and lifestyle is changing, they are consuming junk food which is increasing the chance of various diseases. Herbs are been used since time immemorial as medicines. Herbs have active ingredients which have the property to fight against diseases. In pharmaceutical companies they only add the active ingredient in the drug but in designer foods whole herb extract is added which gives added benefit. Designer food containing the whole herb will be more beneficial than drug containing only the active ingredient. Market available drugs have various side effects but these designer herbal foods will not cause any side effects. Though these designer herbal food will take time to cure the disease. Herbs like Tulsi, Amla, Ashwagandha, Aloe vera & Shankhpushpi has been discussed in this review article, there health benefits and food products in which they can be fortified.

KEYWORDS: Designer foods, Fortification, Herbs, Health benefits.

INTRODUCTION

The economical development leads to changes in terms of income, expenditure and the life style. The life style, eating habits or food habits thrown up a major challenge in the form of "life style diseases". Now-a-days consumption level of junk food is increased that leads to increase in number of diseases and also the nutritional deficiencies. There has to be check on the consumption pattern. The new trend of designer foods can be the best solution. Designer foods are foods that are fortified with healthy ingredients. These foods provide extra nutrition and health. Fortification of conventional foods leads to production of beneficial designer foods.^[1] Designer foods can be fortified with herbs which fight against deadly diseases^[2]. While pharmaceutical companies extract active ingredients from herb and sell as drugs. According to Ayurveda, the herb is used as a whole plant including the leaves, root, fruit, flower, bark etc. in the designer food we are using the whole plant. The Ayurvedic formulation is effective, easy and safer than the western formulation. The only disadvantage is, it is time taking, but

sometimes the western formulation are harmful. India has Food Safety and Standards Act, 2006, Food Safety and Standards Rules, 2011, Food Safety and Standards Regulations, 2011 and the Food Safety and Standards Authority of India (FSSAI) established under the Food Safety and Standards Act, 2006 as a statutory body for laying down science based standards for articles of food and regulating manufacturing, processing, distribution, sale and import of food so as to ensure safe and wholesome food for human consumption. In India, normal food, nutraceutical, designer food/functional food etc. are not categorized separately (FSSAI 2006).^[2]

Herbs have been in use for uncounted time for various purposes. Herb is used as spices and flavoring agent in the kitchen. It is also used in perfumes and cosmetics in a pharmaceutical company. Herbs contain antioxidant, vitamins, phytosterols, essential oils and many other nutrient substances that helps fight against toxins, germs and also boost the immunity level.^[3,4]

HERBAL TECHNOLOGY VALUE ADDED PLANT PRODUCTS:

Designer food: designer food are conventional food fortified with ingredients that have disease preventing property.

Functional food: It is defined as food that provide health benefits to the human body.

Nutraceutical: Specific chemical compounds in food, including Vitamins and additives that may aid in preventing diseases.

Pharma food: Food and nutrient that claim medical or health benefits, including the prevention and treatment of disease.

Phytochemical: Are chemicals derived from plants which have disease preventing property.

Herbs have many properties which make them a beneficial ingredient to be incorporated in food products. Herbs have properties like:

1. Alteratives-known as blood purifiers, the herbs with this property is used in treating toxicity of blood, infections, arthritis, cancer and skin eruptions,
2. Analgesics-Herbs which are having property to relieve pain,
3. Antacids-Herbs that neutralize excess acids in the stomach and intestines,
4. Antiabortives-Herbs that help to inhibit abortive tendencies,
5. Antiasthmatics-Herbs which relieve symptoms of asthma, Antibiotics-Inhibit the growth of or destroy, bacteria, viruses or amoebas,
6. Anticatarrhals-Eliminate or counteract the formation of mucus,
7. Antipyretics- Herbs have cooling property which is used to reduce or prevent fever,
8. Antiseptics-Herbs that can be applied to the skin to prevent the growth of bacteria,
9. Aphrodisias- Herbs have the active ingredients which improve sexual potency and power,
10. Astringents-Herbs have constricting and binding effect used to check hemorrhages and secretions and to treat swollen tonsils and hemorrhoids,
11. Carminatives-Herbs and spices have the property to relieve gas and griping,

12. Cholagogues- Herbs have active ingredients which promote the flow and discharge of bile into the small intestine,
13. Demulcents-Herbs as soothing substances usually mucilage, taken internally to protect damaged or inflamed tissues,
14. Diaphoretics-Herbs which have the property to induce sweating,
15. Diuretics-Increase the flow of urine. They are used to treat water retention, Obesity, Lymphatic swellings, nerve inflammations, infections of urinary extract, skin eruptions and kidney stones,
16. Emmenagogues-Herbs have the property to promote menstruation, induce abortions,
17. Emollients-Substances that are softening, soothing and protective to the skin,
18. Expectorants-Assist in expelling mucus from lungs and thorax,
19. Galactogogues-Herbs which increase the secretion of milk,
20. Hemostatics- Substances that arrest hemorrhaging,
21. Laxatives- Herbs promote bowel movement,
22. Lithotriptics- Herbs that help to dissolve and eliminate urinary and biliary stones and gravels,
23. Nervines-Herbs that calm nervous tension & nourish the nervous system,
24. Parasiticides- Herbs have the property to destroy parasites in the digestive tract or on the skin,
25. Rubefacients-Substances that increase the flow of blood at the surface of the skin and produce where they are applied,
26. Sialagogues- Substances that stimulate the flow of saliva and thus aid in the digestion of starches,
27. Stimulants-Herbs that increase the energy of the body, drive the circulation, break up obstruction and warm the body,
28. Vulneraries- Herbs that encourage the healing of wounds by promoting cell growth and repair.

In this review paper we have highlighted the health benefits of herbs. These herbs can be fortified in conventional foods we consume.

Table 1. Shows Herbs, Designer food & their Health Benefits.

S.no	Herbs	Designer foods	Health benefits
1	Amla	Juice fortified with amla, Mouth freshner, Fortified candy	Anti-inflammatory, Anti-diuretic ^[21]
2	Ashwagan dha	Fortified in juice, smoothie	Blood formation ^[24] , Treat hysteria, swellings ^[27]
3	Aloe Vera	Fortified juice, jelly, capsules, smoothies	Stimulation of insulin secretion, Decreases cholesterol ^[39]
4	Tulsi	Fortified tea, juice, smoothies	As antidiabetic, antifertility, antistress agent ^[41,42] Common cold and fever, As anti-oxidant, Stress resilience ^[5]
5	Turmeric	Fortified instant soup mix, milk fortification	Insulin resistance ^[6] Control blood sugar level ^[7,8] stop allergy and asthma symptoms ^[9]
6	Garlic	Fortified oil, fortified spreads	Reduce cholesterol level ^[10,11]
7	Saffron	Fortified in milk, fortified in sweet dish	Anti-cancer, Antitumor Activity ^[12] Antidiabetic
8	Shankpush pi	Fortified in dairy products	Rejuvenation therapy, Tranquilizer ^[48]

Amla:

Amla is well known for its nutritional qualities. It is rich in polyphenols, minerals and is regarded as one of the richest source of vitamin C (200-900 mg/ 100gof edible portion).^[13,14] Vitamin C or Ascorbic acid helps in the absorption of Iron that is beneficial for Iron Deficiency, Anemia. Amla is not only a good source of Vitamin C but also a good source of antioxidant, Minerals and Polyphenols. Gooseberry is sour, sweet, bitter and astringent in taste. In case of Diarrhea and desentery dried amla is used. The amla juice is used for inflamed eyes and amla juice with lemon is used to treat bacillary and dysentery. Gooseberry is one of the best remedies for scurvy. Amla improves vitality,

resistance to illness, slow down the ageing process and it is also an important part of an Ayurvedic health tonic known as chawanprash. A whole amla fruit treat Asthma, stomach pain, indigestion, constipation, weakness, cough, Jaundice etc. ^[15,16] A boiled amla with steam of Tinospora Cordifolia is known to cure for Urinary diseases. The juice of amla mixed with honey and turmeric used for Gonnococcal Infection. Amla also use as mouth freshner. The dried Amla and Ground bark is used for number of Mouth diseases and gastrointestinal disorders.^[19] An infusion of leaves with fenugreek seed is given for chronic Diarrhea.^[17] The Barks have been reputed to exert antiarrheic effects and for treatment of leucorrhoea (vaginal infection).^[18] According to “Charaka Samhita” the handbook on Ayurveda (vol.1), Amla known by sensitization of teeth, salivation, sweating, awakening of mouth (gustatory sensations) and burning in mouth and throat.

The Fresh fruit is eaten for poor appetite, Weakness and general fatigue. The fruit is reputed for tonic for long life, younger appearance, Hair growth and health too. Amla is used for making hair oils. Amla has the major benefit of hair growth, long and black hair. It is used as an antipyretic, a medicine that reduce fever, antiinflammatory and antidiuretic.^[20, 21] This fruit is also used as an antidote to “mineral” poisons, mainly sulfur and vermillion. This fruit has a sour taste with their cooling potential for treatment of cholera, diarrhea and biliary disorders amla is used by Indonesians.^[22]the disease caused by excessive heat, headache can be cured by putting amla crush on head.^[23]

Ashwagandha:

Ashwagandha is a Sanskrit word means “smell of a horse”. “Ashw” means horse and “Gandha” means the smell. It indicates that the herb is having capacity to impart strength of a horse in the human body. It helps to strengthen the immune system of a human body after an illness.

Ashwagandha has the same family as tomato, it leaves are oval in shape and contain yellow flowers. It bears small berry type red color fruit. The herb is a native of a dry region of India and also in mild climates like United States.

Ashwagandha consists of dried roots and stem bases of *Withania somnifera*. It is rich in proteins, free amino acids like aspartic acid, glycine, tyrosine, alanine, proline, tryptophan, glutamic acid, cysteine, etc., starch, reducing sugars, alkaloids, steroidal lactones. Thus, it acts as a nutritive tonic, stimulant and offers powerful nutritional support, energy and rejuvenation. It is a good source of folic acid, thus is vital for foetal neuronal growth and blood formation.^[24]

Ashwagandha is a plant. Its root, leaves and fruit are used to make medicines. Ashwagandha has so many uses. The root of ashwagandha is a tonic for diuretic, aphrodisiac, astringent and stimulant. It is good for children's health when Ashwagandha powder is given with milk. It is effective in constipation, goiter and nervous breakdown etc.^[25,26] Ashwagandha powder is used externally also. The paste with water applied on swelling, ulcers and carbuncles also applied on the skin to remove pimples, boils, piles and leucorrhoea.^[27] In all varieties of ashwagandha, Nagori is the supreme one.^[28,29]

The leaves of ashwagandha are bitter in taste. Crushed leaves with warm water is taken as a medicine. That can strengthen the immune system. Recommended in fever, cough and painful swelling. The leaf helps to speed up the process of weight loss. To remove white spot from cornea, the seed of Ashwagandha, astringent and rock salt are used. It acts as stimulant so increases the sperm count.^[30]

Aloe Vera:

Aloe vera plant mainly cures the skin, health and hair problems. Aloe vera is an arabic word. "Alloeh" means "shining bitter after substance" while vera means "truth" in Latin. The botanical name of Aloe vera is *aloe barbadensis*. It is a member of the lily family. This herb is heavy in weight as compared to other herbs. It has triangular, fleshy leaves with sharp edges and green in color like a pea. It grows in dry region like Asia, Africa, America and Europe. In India Aloe vera is found in Gujarat, Maharashtra, Rajasthan and Tamilnadu etc. It contains 75 nutrients, minerals, amino acid and active enzymes. The nutrients naturally present in the herbal product safely used both internally and externally. It mainly contains Vitamin A, B1, B2, B6, B12, Vitamin C, Vitamin E, folic acid and Niacin. The

number of minerals found in Aloe vera are Copper, Iron, Sodium, Zinc, Magnesium, Manganese etc. It also contains antioxidant that neutralizes free radicals. They are essential for proper functioning of various enzymatic and metabolic pathways.^[31,32]

Aloe vera has healing property. The Glucomanan, a water soluble polysaccharide can be used for growth of hormones, interact with growth factor receptor on the fibroblast stimulates the activity and proliferation.^[33] Aloe vera gel helps to increase the collagen content. Aloe vera gel not only increases the collagen content but also increases the degree of collagen cross linking and competition. Due to this, contraction and increased breaking strength of scar tissue.^[34] Oral treatment can be possible by Aloe vera gel.^[35]

Aloe vera helps in the secretion of insulin, so, it decreases the blood sugar levels. It also decreases the level of cholesterol, free fatty acid, triglycerides.^[36,37]

Holy basil (Tulsi):

Tulsi is known as "Queen of plants". The mother medicine of nature. The plant Tulsi or Holy Basil is a weed but also cultivated. Tulsi is an important symbol of Hindu religion. Tulsi is a symbol of purity and used in every traditional festival. There are mainly two types of Tulsi present in India. Krishna tulsi that has purple leaves and Shree tulsi that has green leaves. The tulsi is used as herb according to ayurveda. The leaves, flowers, seed, root of tulsi are useful. Tulsi plant is grown in every Indian home. According to Ayurveda, Tulsi has so many health benefits. It is light in digestion and dries tissue secretions. It has antihemorrhagic properties.

The number of medical uses of tulsi (Holy Basil) are:

The leaves of basil are specific for many fever, cough and many other. Tulsi leaves are hot and bitter in taste. Leaves, root, flower, stem, seed etc. of these plants known to possess therapeutic potentials and have been used by traditional medical practitioners, as expectorant, analgesic, anticancer, antiasthmatic, antiemetic, diaphoretic, antidiabetic, antifertility, hepatoprotective, hypotensive, hypolipidemic and antistress agents.^[38,39]

It also suggests to shorten the cause of illness, clinical symptoms and biochemical parameters in patients suffering from viral hepatitis.

Anti fertility effect is due to the urlic acid present in the plant. Tulsi strengthens the immune response by enhancing both cellular and humoral immunity.^[40,41]

Shankpushpi:

Shankpushpi is a Sanskrit word which means “the plant with flower shaped like a conch (shankh).” Shankpushpi plant branches are spread on the ground. The flower are blue in color and the leaves are ellipted in shape. This whole plant is used as herb and according to Ayurveda is considered as “Medhya Rasayana”.^[42] Although this plant is proven for its scientific potential also. This plant is potential for antiulcer, antioxidant, antidiabetic, analgesic, antifungal, antibacterial, antistress, anxiolytic, cardiovascular activity. It contains mainly flavonoid, alkaloids and active chemical that bring the biological effect.^[43,44]

Uses & Benefits:Shankpushpi whole plant is useful in medical treatment. The consumption of this herb is also to prevent the medical loss and improve the memory power that is why it is called as BRAIN TONIC. This herb is more suitable and useful in hypotension, stresses and hypertension. It reduces the cholesterol level in the blood shankpushpi extract can be used and also helps in the reduction of fatty acid and triglycerides phospholipids. It is the best ingredient that will enhance the beauty and nourishment of all the layers of skin. Shankpushpi is also beneficial in rejuvenation therapy and work as psychostimulant and tranquilizer. It also help in removing certain type of fatty acid that are harmful for our body. It is beneficial for weight gain and overall health. The herb is helpful in fighting ulcer that is formed in the body due to glycoproteins and mucus secretion, improving the nervous system. Shankpushpi induce the feeling of calm and peace, promotes good sleep and brings relief. It brings a significant reduction in anxiety level and neuroticism occurring due to varied stress level. Not much research is published in the western medicinal literature on shankpushpi .there is only one study on the herb that through a

light on anti ulcer activity, by reducing the activity of the liver enzyme.^[45,46,47]

CONCLUSION

Designer herbal foods have significant promise in the promotion of human health and disease prevention. Health professional, nutritionists and regulatory toxicologist should strategically work together to plan appropriate regulation to provide the ultimate health and therapeutic benefit to mankind. Long-term clinical studies are required to scientifically validate the designer herbal food in various medical conditions. The interaction of designer herbal food with food and drugs is another area; which should be taken into consideration. The effect of different processing methods on the biological availability and effectiveness of designer herbal food remains to be determined. Still designer food has to be explored more.

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