



Triphala: A Boon in Oral and Systemic Health

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Abstract

Triphala is one of the oldest and longest used natural herbal remedy that is the most versatile. It's an herbal formulation made from the dried powder of three different fruits. The name comes from combining the Sanskrit words "tri" meaning three, "phala" meaning fruit and "churha," which means powder. Triphala contains gallic acid, ellagic acid and chebulinic acid, tannic acid which are all strong antioxidants. It also has flavonoids and polyphenols, which have antioxidants, antibacterial, anti-inflammatory and antiplaque abilities. Triphala's purported uses include the infections, gastrointestinal issues, inflammation, high cholesterol, and immune system malfunction, healing oral ulcers, weight loss, root canal irritants, gum diseases and oral cancer. It also acts as a natural laxative and colon Cleanser.

Keywords: Triphala; Anticancer; Antioxidants; Anti-inflammatory

Introduction

Herbal extracts proved to be effective because they interact with special chemical receptors within the body. Many plant extracts used in dentistry for reducing inflammation, as antiplaque agents, for preventing release of histamine and as antiseptics, antioxidants, antimicrobials, antifungals, antibacterials, anti-virals and analgesics [1]. Triphala commonly known as Triphala churna, Triphala choornam, Phalatrika is derived from the following three fruits: amla, haritaki and bibhitaki. Dried powders from these three medicinal plants are mixed in equal parts to make a proper triphala powder (or churna). Each of these fruits has medicinal value on its own so combining the three into triphala can give all the individual benefits in one.

Amla (*Emblica officinalis*) is also known as Indian gooseberry. It has high contain of vitamin C and can be used either alone or in combination with other plants to treat the common cold and fever and as a diuretic, digestive, laxative, liver tonic, restorative and anti-inflammatory agent [2].

Haritaki or Harada (*Terminalia chebula*) known as "king of medicine." Haritaki is widely used to treat a variety of health issues including constipation, dementia and diabetes. It's also anti-inflammatory [3].

Bibhitaki (*Terminalia bellirica*) is rejuvenator with detoxifying qualities. It is extensively used in traditional Indian ayurvedic medicine for the treatment of diabetes, high blood pressure and rheumatism. Studies have even shown that this fruit's extract might be able to inhibit atherosclerosis plaque progression [3].

Main constituents of triphala

Tannins: "Tannin" is has a property known as astringency. This group of compounds, especially green teas and red wines, prevent a variety of ills. Many human physiological activities, such as stimulation of phagocytic cells, host-mediated tumor activity, and a wide range of anti-infective actions, have been assigned to tannins. One of their molecular actions is to complex with proteins through non-specific forces such as hydrogen-bonding and hydrophobic effects, and covalent bond formation. Anti-microbial action may due to their ability to inactivate microbial adhesions, enzymes, and cell envelope transport proteins [3].

Quinones: It gives a source of stable free radicals, and lead to inactivation of the protein and loss of function. So, the potential range of quinone anti-microbial effects is great. Probable targets in the microbial cell are surface-exposed adhesins, cell wall polypeptides, and membrane-bound enzymes [3].

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Flavones, flavonoids, and flavonols: It is mainly synthesized by plants in response to microbial infection, It is an effective antimicrobial substances against a wide array of microorganisms. Their activity is due to their ability to complex with extracellular and soluble proteins and to complex with bacterial cell walls. All these compounds help to inhibit *Vibrio cholera*, *Shigella*, *Streptococcus mutans in vitro*. Inhibition of isolated bacterial glucosyltransferases in *S. mutans*, and reduction of fissure caries by about 40% has also been demonstrated [3].

Gallic acid: Gallic acid is a common phyto-constituent present in all three herbs used in Triphala. It has an antioxidant and immunomodulatory properties [4]. It also suppresses growth of cancer cells [5].

Vitamin C: Fruit juice of *Embllica officinalis* (EO) contains the highest vitamin C (478.56 mg/100 mL) content. The fruit when blended with other fruits boosted their nutritional quality in terms of vitamin C content. Vitamin C in EO accounts for approximately 45-70% of the antioxidant activity [6]. Evidences have been reported for the relation between vitamin C and periodontal disease. Significant gum bleeding can occur in vitamin C deficiency. Vitamin C along with bioflavonoid helps to speed up the healing process [7].

Oral and Systemic health benefits of triphala

Oral Ulcers: Triphala is rich in tannins and phenolic compounds which are responsible for antioxidant properties. When it is mixed with honey is applied to aphthous ulcers of the mouth helps in healing ulcers [8].

Antiplaqueproperty: Studies conducted which shows that when mouthwash prepared with 0.6% of Triphala is compare with commercially available Chlorhexidine mouthwash. Result showed triphala mouthwash user showed highly effective in preventing plaque accumulation and gingivitis [9-11]. It mainly inhibit the formation of bio-film and due to its antioxidant activity exhibited might protect the gum cells effectively from free radicals [12].

Triphala in Endodontics: This is an ayurvedic rasayana consisting which is rich in citric acid & may aid in removal of smear layer thereby acting as chelating agent and also found to be alternative to sodium hypochlorite for root canal irrigation [13].

Triphala as Antibiotic: Based on *in vitro* studies, Triphala may have antibacterial activity against several bacterial isolates, including various species of *Pseudomonas*, *Klebsiella*, *Clostridium*, *Shigella*, *Staphylococcus* (including beta-lactamase-producing methicillin-resistant *Staphylococcus aureus*), *Vibrio*, *Salmonella* (including multidrug-resistant *Salmonella typhi*), *Escherichia*, *Enterobacteria*, *Corynebacteria*, *Enterococcus*, *Bacillus*, *Proteus*, and *Helicobacter pylori* [14].

Triphala as Antifungal Agent: Based on *in vitro* studies, extracts of *Terminalia chebula* may inhibit the growth of *Trichophyton* species, *Candida* species (including clotrimazole-resistant *Candida albicans*), *Aspergillus* species, and *Torulopsis glabrata*. It can be used in fungal infections of oral cavity [15].

Anti Cancer: Triphala has an antiproliferative and proapoptotic effects on cancer cells and human colon cancer stem cells. The methanol extract of triphala contains a variety of phenolics compound. The triphala extract was, able to suppress the spread of and induce cell death of human colon cancer stem cells making it worthy of further research as a natural anticancer treatment [16].

The gallic acid in triphala has anticancer activity, specifically when it comes to prostate cancer cells [17]. Triphala mouth rinse may help to reverse tobacco-induced oral precancerous lesions, according to a 2014 study [18]. Studies have also shown that it has the ability to kill tumor cells but spare normal cells making it very promising as a potential anticancer drug [19]. During treatment part of precancerous lesions like leukoplakia [20]. Triphala found to have great potential for reversal of these lesions [21].

Natural Laxative, Colon Cleanser & Possible Colitis Helper: It helps to tone and strengthen the digestive system, particularly in cases of weak digestion and constipation. Regular bowel movements are important for removing bacteria, heavy metal detox and eliminating excess fatty acids from the body. Triphala tend to be gentler than over-the-counter laxatives, nourish the digestive tract and help produce regular bowel movements. Triphala can help to naturally cleanse the colon.

In elimination process, amla supports intestinal repair, haritaki strengthens the intestinal muscles to contract more efficiently when the bowels need to move, and bibhitaki pulls the old mucus off the wall. Moreover, it contains anthraquinones that help in stimulating peristalsis.

Study showed that a polyherbal formulation in powder form containing isabgol husk, and triphala extract was an effective, safe and non-habit-forming herbal laxative formulation for the management of constipation [22].

Weight Loss: Studies of human obese subjects have had similar results. Studies showed individuals of triphala group experienced significantly greater decrease in weight as well as waist and hip circumference as compared to the placebo group. Triphala has antioxidant, which helps in scavenging the free radicals and anti hyperlipidemia abilities, which all have a positive effect on metabolic health and discourage obesity [23].

Lower Cholesterol: Cholesterol is a naturally occurring substance made by the liver and required by the body for the proper function of cells, nerves and hormones. Though cholesterol is actually crucial in healthy amounts, but it's too high, can be problematic. Cholesterol can combine with fat, calcium and other substances in the blood to form plaque. Plaque then slowly builds up and hardens in the arteries, causing them to narrow. This build-up of plaque, a condition called atherosclerosis, can lead to heart disease, heart attack and stroke. Triphala helps to reduce cholesterol levels and arterial plaque. Research showed bibhitaki, helps to inhibit atherosclerosis plaque progression [24].

Anti-Inflammatory & Anti-Arthritis: Triphala's high antioxidant and polyphenol content make it an excellent anti-inflammatory. Arthritis an inflammatory disease; it's an inflammation of one or more joints, which causes pain and stiffness that can worsen with age.

To combat arthritis, triphala is an anti-inflammatory food supplements. Most of the studies have been conducted with animals, showed that triphala might be a helpful natural remedy for arthritis sufferers. It improved bone and cartilage breakdown during rheumatoid arthritis [25].

Periodontal Diseases: It has a property of Collagenases inhibitory activity which helps in treating periodontal attachment loss. Mainly matrix metalloproteinase (MMP)-9 at a concentration of 1500 µg/

ml [26,27]. Oral submucous fibrosis in adjuvant with its conventional therapy and help in reducing oral ulceration [28]. Triphala alone is capable to provide partial relief but when combined used with metronidazole, more effective for the treatment of periodontal disease.

Strengthens hair roots and enrich hair colour [28].

Diabetic Management: Clinical study conducted on 160 patients at J. B. Roy State Ayurvedic Medical College and Hospital, Kolkata reveals that regular use of Triphala Churna promotes mental concentration, sleep, appetite and also reduces blood sugar among diabetics [29]. Triphala contains various essential compounds that actively reduce the inflammatory cytokine release effect in diabetic patients thus resulting in the reduction of insulin resistance.

Oral Intake of Triphala is usually taken on an empty stomach and can be ingested in a few different ways. The powder can be used to make a tea by adding a half-teaspoon of powder to a cup of hot water. Stir well and wait for it to cool. You can also combine the powder with honey or ghee before a meal. Tablets and capsules are typically taken once or twice a day, before food. For a liquid supplement, you will typically be directed to take 30 drops in water or juice, 1–3 times daily.

As a digestive tonic and laxative, triphala is best taken in the evening, about two hours after eating, and at least 30 minutes before bedtime. Whether you buy a powder, capsule or tablet, dosing directions should be provided on the packaging. In general, a larger dosing has more laxative effects while a smaller dose tends to be more gradually blood purifying.

Triphala is not addictive and can be taken over long periods of time. However, it is recommended that every 10 weeks, you should stop taking it for two to three weeks in order to give the body a rest and to maintain the effectiveness of the remedy [30].

Triphala potential side effects & Caution

Triphala may cause gastrointestinal side effects. It may increase intestinal gas due to possible cleansing and detoxification effects on your digestive tract. High doses of triphala may lead to loose stools or diarrhoea can lead to dehydration. It should be used carefully or not at all by people taking blood thinning medications. It is not advised for pregnant or nursing women or children and should be avoided. It also should not be used with cases of diarrhoea.

Conclusion

Triphala medicinal properties are useful and effective source of treatment for various disease processes. Triphala is not a substitute for but can be used in conjunction with contemporary dentistry. The combination of the two streams of treatment will work together for overall benefit of the patient in oral and systemic health. It is effective in the management of overall health without any adverse effect so aids in effectiveness, safety, accessibility and control over treatment hence can be tried in dentistry as they are used in medical disorders.

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