IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

# Triphala: An Ayurvedic Combination For Health Rejuvenation

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**Abstract**

According to Sanskrit, the word "triphla" is made up of two In Sanskrit, the word "tri" connotes three, whereas the word "phala" refers to fruits. Bibhitaki (*Terminalia bellirica*), Haritaki (*Terminalia chebula*), and Amla (*Emblica Officinalis*) are the three fruits that make up triphla. Therefore, triphla is composed of these three fruits. In the Ayurvedic medical system, it is considered to be one of the most significant combinations, and it has been traditionally utilized in the treatment of a variety of ailments. This is a combination of three plants that are considered to be medicinally significant. These plants are Amla, Bibhitaki, and Haritaki, each of which possesses a variety of medicinal properties within themselves. According to the findings of the current research, triphala possesses a number of medical qualities, including antibacterial, antioxidant, anticancer, antipyretic, hepatoprotective, hypoglycemic, hypolipidemic, and skin protective capabilities.

Keywords: Triphla, Bibhitaki, Haritaki, Amla, Ayurvedic.

## Introduction

The term "triphla" is derived from two "Phala" means fruits, and "tri" means three in Sanskrit. Accordingly, triphla is made up of three fruits: Haritaki (Terminalia chebula), Bibhitaki (Terminalia bellirica), and Amla (Emblica Officinalis) [1].Although each of these three fruits has unique therapeutic qualities for various health conditions [2], [3], their combination works better for various health conditions. In the ayurvedic medical system, triphla is utilized as a key medicinal substance to treat a variety of ailments. Each 2.8 gram of triphla powder has 10 calories, 1 gram of fiber, 1.8 grams of carbohydrates, and 0 grams of fat, sugar, or protein, according to [1].According to Ayurveda, triphla powder contains a 3:1:2:1 ratio of Amla, Bibhitaki, and Haritaki [4].

The three components of triphla have following properties-

**Amla (Emblica Officinalis)**

Amla, often called Indian gooseberry, is a plant that grows all throughout India and the Indian subcontinent. It is a tiny tree, about 15 meters tall, with light green foliage, greenish yellow blooms, and thin, grey bark. The fruits are round, green, and have a sour flavor. It is considered a therapeutic plant in ayurvedic medicine. The Charaksamhita, considered the founding scripture of Ayurveda, refers to it as Rasayan. It is advantageous for preventing aging and prolonging life. In Sanskrit, it is also referred to as amritphale, or nectar fruit.

It is the main ingredient in chyawanprash, a treatment that chyawan invented, and it is said that by using it, he cures his body. According to Ayurvedic doctors, it revitalizes all the organs and fortifies the immune system, which protects against all diseases [5]. It is said to be beneficial for regular consumption. Amla is an excellent source of vitamin C and aids in the body's production of red blood cells. It helps with diabetes, liver problems, and other ailments. Its numerous applications include fresh fruit, juice, candy, chips, pickles, jelly, powder, sauces, jam, chywanpras, and more [6]. Besides that, a number of ayurvedic medications contain its fruit, bark, seeds, and leaves. E. officinalis is a widely used medication and a key component of many ayurvedic remedies[6].

**Classification**

| | |
|---|---|
| Kingdom | Plantae |
| Divison | Angiospermae |
| Class | Dicotyledonae |
| Order | Geraniales |
| Family | Euphorbiaceae |
| Genus | Emblica |
| Species | Officinalis Geartn. |

**Common Names**

| Botanical Name | Emblica Officinalis |
|---|---|
| English | Gooseberry |
| Latin | Emblica Officinalis Gaerte |
| Hindi | Amla |
| Sanskrit | Amalaki, Amritphal |
| Tamil | Nelli |
| Telegu | Usirikaya |
| Marathi | Amla |
| Gujrati | Ambla |
| Malayalam | Nelli kayi |
| Kannada | Nelli kayi |
| Bengali | Amalki |

Vitamin C, amino acids, and minerals are abundant in amla. Its fruit has 160 times as much ascorbic acid and three times as much protein as an apple. It also contains more amino acids and minerals than apples. Lysine, alanine, proline, aspartic acid, and glutamic acid are among the amino acids it contains [7]. It also contains β carotene, gallic acid, catechol, ellagic acid, trialloylglucose, phloroglucinol, indole acetic acid, and other antioxidants [8].

It has a variety of therapeutic uses. Antioxidants are naturally present in it. It can help with a wide range of conditions, such as diabetes, high cholesterol, cancer, peptic ulcers, liver disease, diarrhea, scurvy, and problems with the skin, teeth, eyes, and hair [7], [8]. It also improves memory and acts as a rejuvenating agent [5].

**Bibhitaki (Terminalia bellirica)**

Bibhitaki, also known as baheda in Hindi and Belleric Myrobalan in English. It belongs to the Combretaceae family and is a huge deciduous tree. It is spreading widely in South East Asia, Bangladesh, Nepal, Sri Lanka, and the Indian subcontinent [9]. Bibhitaki means "the fruit that removes the fear of disease." Herbal medicine is made from the many parts of this plant, such as the fruit, seed, leaves, bark, and roots. It is utilized in a variety of traditional medical systems, such as Siddha, Ayurveda, and Unani [9]. The ancient Ayurvedic classic Charaka Samhita mentions bibhitaki fruits as having the ability to cure illness and provide longevity, vigor, and intelligence [10]. The Charaka Samhita describes a number of "rasaayan" that make use of bibhitaki.

**Classification**

| | |
|---|---|
| Kingdom | Plantae |
| Phylum | Streptophyta |
| Class | Equisetopsida |
| Sub Class | Magnoliidae |
| Order | Myrtales |
| Family | *Combretaceae* |
| Geneus | *Terminalia* |
| Species | *Terminalia bellirica* |

**Common Names**

| | |
|---|---|
| Botanical Name | *Terminalia bellirica* |
| English | Belleric Myrobalan |
| Hindi | Baheda |
| Sanskrit | Bibhitaki |
| Marathi | Beheda |
| Bengali | Bahera |
| Malayalam | Tanni |
| Telugu | Vibhitakamu |

Gallo-tannic acid, belittin, gallic acid, ellagic acid, termilignan, thanni lignan, flavone and anolignan B, tannins, ethyl gallate, galloyl glucose, chebulaginic acid, phenyllemblin, mannitol, glucose, fructose, rhamnose, and -sitosterol are among the important phytoconstituents found in the plant, according to the results of the extensive research on it [11]. Its pharmacological properties, including antibacterial, antioxidant, antisalmonella, hepatoprotective, antispasmodic, and bronchodilatory properties, have been demonstrated in a number of investigations [11]. According to another study, crude extracts of various plant parts have long been used for their analgesic, antibiofilm, anticancer, antidepressant, antidiabetic, antidiarrheal, anti-ulcer, immunomodulatory, anti-spasmodic and bronchodialatory, antifertility, antihypertensive, antifungal, antimicrobial, anti-inflammatory, and antioxidant qualities [12].

**Haritaki (Terminalia chebula)**

Terminalia Chebula is popularly referred to as haritaki or harad in Hindi and black- or chebulic myrobalan in English. The Indian subcontinent and South Asian nations—India, Pakistan, Nepal, China, Sri Lanka, Malaysia, Vietnam, and so on—are home to it. The elliptical seeds of this medium- to large-sized deciduous tree are frequently utilized in pharmaceuticals. With a height of up to 30 meters and a diameter of 1 to 1.5 meters, it is a medium- to big deciduous tree with many branches. The elliptical, 10–30 cm long leaves have a cordate base and a sharp apex. There are six to eight pairs of veins in the leaves' vasculature. Simple terminal spikes have short-stemmed, monoecious, dull-white to yellow flowers with a strong, disagreeable odor.

Although T. chebula includes a variety of phytoconstituents, including tannins, flavonoids, sterols, amino acids, fructose, resin, fixed oils, and others, its tannin concentration is relatively high (about 32%). Furthermore, the geographic location of T. chebula has a significant impact on its tannin content.Chebulic acid, chebulinic acid, chebulagic acid, gallic acid, corilagin, and ellagic acid are the main constituents of tannin [13].

**Classification**

| | |
|---|---|
| Kingdom | Plantae |
| Phylum | Magnoliophyta |
| Class | Magnoliopsida |
| Sub Class | Magnoliidae |
| Order | Myrtales |
| Family | *Combretaceae* |
| Geneus | *Terminalia* |
| Species | *Terminalia Chebula* |

**Common Names**

| | |
|---|---|
| Botanical Name | *Terminalia chebula* |
| English | Chebulic Myrobalan |
| Hindi | Harad |
| Sanskrit | Haritaki |
| Tamil | Kadukkai |
| Kannada | Harra |
| Bengali | Haritaki |
| Telugu | Karakkaya |

In addition to treating conditions including rheumatoid arthritis, lung disorders, cataracts, Parkinson's disease, and liver dysfunction, Ayurveda and Unani believe that medicinal plants can lessen or reduce the risk of cardiovascular disease [14]. The anti-diabetic, anti-hyperlipidemic, antioxidant, hepatoprotective, neuroprotective, anti-inflammatory, anti-arthritic, gastroprotective, anti-microbial, antiparasitic, wound-healing, and anti-aging effects of Chebulic Myrobalan have been demonstrated in a number of studies [15].

**Medicinal properties of Triphla**

According to Ayurveda, triphala is a general remedy for a variety of ailments and the main treatment for certain gastrointestinal disorders. Triphala is a popular treatment for constipation because it speeds up peristalsis, improves food absorption and digestion, and tones the gastrointestinal tract and cleans the intestines [16]. Additionally, triphala controls serum cholesterol levels, enhances circulation, relaxes the bile duct, and has hepatoprotective properties. It is said that taking triphala daily promotes a regular appetite, healthy digestion, the prevention of senescence, and an increase in immunity, hemoglobin, and red blood cells. Healthy endocrine system secretions, which are responsible for maintaining the body's normal balance and sustaining vital physiological activities, are believed to be supported by triphala [16], [17], [18].

**Antimicrobial properties**

Antimicrobial qualities are those that limit the growth of bacteria, fungus, and other microorganisms. Numerous research demonstrate tripahla's antimicrobial qualities. Shrinagesh et al. (2011) conducted a study to evaluate triphala's antibacterial activity against the mutans streptococci bacterium. A double-blind, randomized control trial was conducted with 57 volunteers who were considered to be at high risk for dental cavities [19]. At random, they were split up into three study groups: 2) 15 milliliters of active control, 0.2% chlorhexidine; 3) no mouthwash (passive control); and 4) 15 milliliters of mouthwash with 6% triphala. Mouthwashes were used twice a day for 15 days. At baseline, as well as at 15 and 45 days, unstimulated saliva samples were collected [19].The findings indicate that triphala and chlorhexidine have comparable antibacterial action against mutans streptococci. It is inexpensive and doesn't have the side effects that are commonly associated with chlorhexidine [19].

Amanullah et al. (2011) conducted a second study to investigate triphala's antibacterial efficacy against microorganisms obtained from HIV-infected patients [20]. Triphala's alcoholic and aqueous extracts were evaluated in this investigation against a number of bacterial strains. Isolates were obtained from HIV-infected patients' urethral swabs, seminal fluid, urine, high vaginal swabs, skin swabs, blood, and sputum specimens. The findings demonstrated that triphala's ethanolic and aqueous extracts have strong antibacterial properties against a broad range of bacterial isolates from HIV-infected patients[20].

Omran et al. 2020 conducted another study to assess the antibacterial activity of triphala ingredients. To evaluate the antibacterial efficacy against certain strains of microorganisms, including Gram-positive and Gram-negative bacteria and fungus, triphala was used to generate various therapeutic formulations, such as cream and

nanoemulsion hydrogel [21]. The outcome demonstrated the antibacterial effectiveness of these formulations against a range of microorganisms[21].

**Antioxidant Property**

Antioxidants are those substances that prevent the oxidation process happened in biological system by decreasing the concentration of free radicals. There are several studies carried out, which proved the antioxidant properties of Triphala.

Vani et al. (2008) conducted a study to investigate the antioxidant properties of triphala and its compounds. They looked at DPPH reduction as a measure of free radical scavenging activity, and riboflavin/light/NBT reduction and linoleic acid peroxidation as measures of superoxide and peroxy radical scavenging characteristics, respectively [22]. The findings indicate that triphala's alcoholic extract has potent antioxidant qualities. Additionally, the results demonstrate that triphala is efficient in inhibiting lipid peroxidation caused by the Fe3+/ADP/Ascorbate system in rat liver mitochondria as well as superoxide-induced hemolysis of red blood cells[22].

Babu et al. [23] conducted a second study in 2013 to investigate triphala's antioxidant properties utilizing a variety of in vitro models. This work employed the DPPH model to investigate the free radical scavenging property of ethanolic extract. The results showed that the triphala ethanolic extract exhibited high free radical scavenging activity. The total antioxidant effect is due to its polyphenolic and other phytochemical components [23]. The findings suggest that "triphala" may be a promising natural antioxidant source to prevent or delay the onset of aging and degenerative diseases associated with oxidative stress [23].

**Anticancer Property**

The capacity of a chemical to prevent cancer is known as its anticancer property. Numerous studies demonstrate triphala's potent anticancer properties. A study on the usage of triphala for cancer prevention and treatment was conducted by Baliga et al. in 2010. According to the study, triphala is a useful formulation in the Ayurvedic system that has laxative, digestive, diuretic, and colon-cleansing properties[24]. According to experimental research, triphala has antitumor, radioprotective, and chemoprotective properties in addition to being helpful in preventing cancer[24].

Yahuafai et al. [25] conducted a second investigation in 2023 to investigate the anticancer potential of triphala extract against mice's hepatocellular carcinoma cells. This work used HepG2 cells and the MTT test to evaluate the anticancer activity of TPL and its composite extracts in vitro [25].The findings showed that, in a time-dependent way, the triphala extract has antiproliferative action against HepG2 cells. Additionally, the data indicate that triphala extract is a nontoxic medication that has anticancer potential [25].

**Antipyretic**

The term "antipyretic" refers to substances that lower body temperature or relieve fever. Numerous studies demonstrate triphala's antipyretic qualities. Sabina et al. conducted a study in 2007 to investigate triphala's

analgesic, antipyretic, and ulcerogenic properties. The non-steroidal anti-inflammatory medication Indomethacin (10 mg $kg^{1}$ b.wt.) was utilized as a standard in this study for comparison's sake [26]. Triphala was found to have a good analgesic and antipyretic effect at both dose levels without causing any stomach harm. The findings unequivocally demonstrate triphala's strong analgesic, antipyretic, and gastroprotective properties[26].

**Hepatoprotective Property**

The liver is a vital organ that controls metabolism and digestion. Hepatoprotective property is the ability of a chemical to shield and repair the liver. Numerous studies have demonstrated triphala's hepatoprotective qualities. Gupta et al. (2015) conducted a study to investigate the hepatoprotective properties of triphala and its constituents [27].According to the findings, triphala and its constituents have notable hepatoprotective benefits.

Due to the high concentrations of phenolic and polyphenolic substances, Triphala and other plant extracts like portions of P. embilica, T. chebula, and T. bellerica demonstrated notable protection against acute liver damage brought on by large dosages of medications and chemicals[27].

Wei et al. conducted a second investigation in 2021 to examine the impact of several triphala extracts on acute liver damage caused by carbon tetrachloride in mice. The chemical properties of triphala extracts produced by (a) 0.5 h ultrasonication, (b) 2 h reflux, and (c) 4 h reflux were characterized in this study using HPLC fingerprinting. Serum levels of alanine transaminase (ALT) and aspartate aminotransferase (AST) were also measured in conjunction with the liver antioxidant and inflammatory markers malondialdehyde superoxide dismutase glutathione peroxidase (GSH-Px), TNF-α, and IL-6 [28]. The gene and protein expression of Nrf-2, heme oxygenase (HO-1), and NADPH Quinone oxidoreductase (NQO-1) in liver tissue were evaluated using real-time PCR and western blotting. The findings indicate that triphala extract prevents acute liver damage caused by CCl4. The most effective ultrasonic extract was that of triphala, suggesting that the larger tannins may be responsible for hepatoprotection by activating Nrf-2 signaling [28].

An investigation on the preventive effect of triphala against paracetamol-induced hepato-renal damage in mice was conducted by Singh et al. in 2015. Swiss albino mice were used in this investigation and split up into five groups. The triphala aqueous extract was taken orally for seven consecutive days at two different doses (100 and 300 mg/kg body weight) to induce hepato-renal toxicity. A single intraperitoneal injection of paracetamol (500 mg/kg body weight) was administered after this. Serum levels of bilirubin, liver enzymes, alanine aminotransferase (ALT), bilirubin, creatinine, urea, uric acid, and alkaline phosphatase (ALP) were measured as markers of liver and renal damage [29].The findings indicate that triphala extract significantly protects against the hepato-renal damage caused by paracetamol [29].

**Hypoglycemic Property**

Substances known as hypoglycemics lower blood sugar, especially in people with type 2 diabetes. Numerous research demonstrate triphala's hypoglycemic qualities. Rajan et al. (2008) conducted a study to examine the hypoglycemic impact of triphala on a subset of individuals with diabetes mellitus who were not

insulin-dependent profile [30]. Triphala powder, also referred to as The Three Myrobalans (Terminalia bellirica, or belliric myrobalan; Terminalia chebula, or inknut; and Embilica officinalis, or Indian gooseberry), was administered for 45 days to NIDDM patients who were selected for the study. The blood glucose levels of the subjects were significantly lower, according to a statistical analysis of the blood profile [30].

In a rat model of insulin resistance, Prativadibhayankaram et al. (2008) investigated the anti-diabetic effects of triphala fruit extracts both separately and in combination [31].In a rat model of insulin resistance caused by a high sugar diet, fruit extracts of Emblica officinalis Gaertn., Terminalia chebula Retz., and T. bellirica Roxb. are utilized separately and in combination (Triphala). The findings indicate that triphala's three constituents each exhibited notable antidiabetic effects. Additionally, T. bellirica exhibited hypolipidemic activity [31].

**Hypolipidemic Property**

Substances that lower cholesterol levels and improve cardioprotective effects are known as hypolipidemic substances. Numerous research has validated triphala's hypolipidemic properties. The hypolipidemic impact of triphala on experimentally produced hypercholesteremic rats was investigated in a 2007 study by Saravanan et al. There were four groups of rats employed in this study: Triphala-treated, control, hypercholesterolemia (4% cholesterol + 1% cholic acid + egg yolk), and Triphala-pre-treated hypercholesteremic rats [32].The findings showed that triphala significantly reduced the levels of total cholesterol, LDL, VLDL, and free fatty acids in hypercholesteremic rats. According to the data, the triphala formulation was associated with hypolipidemic effects in the experimentally generated hypercholesteremic rats [32].

In order to assess the hypolipidemic impact of triphala (Terminalia chebula, Terminalia belerica, and Emblica officinalis) on female albino rats, Eid et al. (2011) conducted another study. Six groups are created for the experiment in this study [33].According to the biochemical criteria, the results demonstrate a considerable increase in body weight, serum glucose, ASAT, ALAT, GGT, LDH, total protein, albumin, and total lipids in the liver.The liver tissue of the hyperlipidemic rats had several histological and histochemical changes. Meanwhile, the histological, histochemical, and biochemical properties were enhanced by the triphala treatment[33].

**Skin protective property**

Numerous studies demonstrate triphala's ability to preserve the skin. Varma et al. (2016) conducted a study to examine the protective effects of triphala on human keratinocytes and cutaneous fibroblasts. According to the study, the main components of triphala extract were determined by LC-MS to be gallic acid, ellagic acid, and chebulinic acid [34].According to the findings, triphala may have antioxidant properties and functions as a skin-protective substance by promoting certain young genes and repairing skin structural proteins[34].

Kumar et al. (2008) conducted a second trial to investigate the impact of triphala on the healing of an infected full-thickness cutaneous wound. This study shows that an alcoholic extract of triphala has in vitro antibacterial effectiveness against wound pathogens such Streptococcus pyogenes, Pseudomonas aeruginosa, and Staphylococcus aureus. A 10% w/w triphala extract ointment was prepared using an infected rat model, and its

ability to promote in vivo wound healing was assessed using biochemical analysis, healing rate, bacterial count, and matrix metalloproteinase expression [35]. The outcomes demonstrated Triphala ointment's antibacterial, wound-healing, and antioxidant properties, which are essential for the treatment of infected wounds [35].

## Conclusion

One of the key ingredients in the Ayurvedic medical system, triphala has long been used to treat a variety of illnesses. It is a blend of three medicinally significant plants, Amla, Bibhitaki, and Haritaki, each of which has unique therapeutic qualities. Triphala possesses a number of therapeutic qualities, including antibacterial, antioxidant, anticancer, antipyretic, hepatoprotective, hypoglycemic, hypolipidemic, and skin-protective qualities, according to the current study. Triphala is a valuable therapeutic combination because of these qualities, however there is a chance that it could have negative effects and that more research could be done.

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