



Review Article

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TRIPHALA: A COMPREHENSIVE AYURVEDIC REVIEW

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ABSTRACT

Triphala is used in the traditional Indian system of medicine. The fruit of three together is called Triphala and vara, phalatrikam, sresthatamam are its synonyms. It is an antioxidant-rich herbal formulation and possesses diverse beneficial properties. It is a widely prescribed Ayurvedic drug and is used in the ailments of all dosas, stimulates digestive capacity, rasayana and vrisya etc. It is a polyherbal compound. It is necessary to corroborate the consistency of mixing or combining in attribute balance. As per Ayurvedic Formulary of India (AFI) it is prepared by combining a 1:1:1 mixing of ground dry fruits, called as myrobalans. It shows immunomodulatory properties and helps in improving the body's defense system. In recent years there are several studies which suggest that Triphala possesses anti-mutagenic, radio protecting and antioxidant activity and beneficial in diseases conditions.

Keywords: Triphala, Ayurved, Polyherbal, Antioxidant, Immunomodulatory, Radio protective.

INTRODUCTION

Triphala is a drug widely used in many disorders due to its various pharmacological activities. Triphala is composed of the three myrobalans, *Terminalia chebula* Retz. (Haritaki), *Terminalia bellerica* Roxb. (Bibhitaki) and *Emblica officinalis* Gaertn. (Amalaki) and is one of the most commonly used Ayurvedic preparations. The formulation generally consists of equal proportions of pericarps of this myrobalans.¹

Triphala has been described in the ancient Ayurvedic text as a Tridoshic Rasayana, a therapeutic agent with balancing and rejuvenating effects on the three humours or constitutional elements in Ayurveda vata, pitta and kapha. *Terminalia chebula* Retz and *Terminalia bellerica* Roxb have a warm energy, while *Emblica officinalis* Gaertn. is cool in nature. Triphala, being a combination of all three, is therefore balanced, making it useful as an internal cleansing, detoxifying formula. It is regarded as an important Rasayana and good purgative in Ayurvedic medicine. Recipe for this traditional herbal supplement is described in the traditional Indian texts, the Charaka and Susruta Samhita.

The different properties and the characters of the various ingredients of the drug are as mentioned below:

Haritaki

Latin name - *Terminalia chebula* Linn.

Family - Combretaceae

Classical name - Haritaki

Sanskrit synonyms - Haritaki, Pathya, Abhaya, Avyatha, Vayastha, Haimavati, Shiva

Hindi name - Harre, Harad

English name - Chebulic Myrobalan

Swaroopa (Habit) - A moderate sized / large deciduous tree

Habitat - Found in MP, W. Bengal, Karnataka and Maharashtra in India, Burma and Ceylon

Types - Seven types namely Vijaya, Rohini, Putana, Amrita, Abhaya, Jivanti and Chetaki

Ayurvedic Pharmacodynamics

Rasa - Pancharasa (Kashaya predominance, Lava rahita)

Guna - Laghu, Ruksha

Virya - Ushna

Vipaka - Madhura

Prabhava - Tridoshahara

Dosha karma - Mainly kapha pitta samaka.

Parts used - Fruits

Chemical Composition

Fruit contains tannin up to 30 %, chebulic acid and gallic acid and some purgative constituents of the nature of Anthraquinone.

Therapeutic Uses

The fruit is the prominent herbal drug, commonly and widely used in Indian system of Medicine and is a frequent addition in a large number of formulations. It is useful in asthma, sore throat, thirst, vomiting, eye disease, heart and bladder diseases, strangury, urinary discharges, ascites, biliousness, inflammation, bleeding piles, typhoid, constipation, anemia, elephantiasis and delirium. The ripe fruit are purgative, tonic, carminative and strengthens the brain, eyes and gums. The unripe fruit is astringent and useful in dysentery and diarrhoea.

Vibhitaki

Latin name - *Terminalia bellerica* Roxb.

Family - Combretaceae

Classical name - Vibhitaka

Sanskrit synonyms - Aksha, Kaliphala, Bhutavasa, Kalidruma, Karnaphala

Hindi name - Bahera, Baherha

English name - Belleric Myrobalan

Swaroopa (Habit) - A large deciduous tree

Habitat - Throughout the deciduous forests of India and Burma

Pharmacodynamics

Rasa - Kashaya

Guna - Laghu, Ruksha

Virya - Ushna

Vipaka - Madhura

Prabhava - Tridoshagna

Dosha karma - Kapha hara

Parts used - Fruit

Chemical Composition

Fruit contains 17 % tannin and gallo-tannic acid (colouring matter) and resin. Seeds contain greenish yellow oil.

Therapeutic Uses

The bark is beneficial in asthma and leucoderma. The fruit is digestible, laxative and antihelminthic and is employed for bronchitis, sore throat, biliousness, inflammation and in diseases of eye, nose, heart and urinary bladder. The oil is a good application for the hair. On the fresh cuts and wounds, the fine powder is dusted to arrest bleeding as an astringent and styptics agent. The fruit of the *Beleric myrobalan* forms an ingredient of an important group of three myrobalans (viz. embelic, beleric and chebulic myrobalans) popularly known as Triphala.

Amalaki

Latin name - *Embllica officinalis* Gartn.

Family - Euphorbiaceae

Classical name - Amalaki, Dhatri

Hindi name - Awala, Amla, Aonla

Sanskrit synonymns - Amalaki, Dhatri, Vyastha

English name - Indian gooseberry

Swaroopa (Habit) - A medium sized tree

Habitat - Found throughout India; often planted in gardens and cultivated also in small and large scale

Ayurvedic Pharmacodynamics

Rasa - Pancharasa (Amla predominance and Lavanarahita)

Guna - Laghu, Ruksha, Sita

Virya - Sita

Vipaka - Madhura

Prabhava - Rasayan

Dosha karma - Tridoshara, Pittasamaka (mainly)

Parts used - Fruits

Chemical Composition

Fruit is a well known rich source of Vitamin C. Seeds contains fixed oil, phosphatides and an essential oil. Fruits, barks and leaves are rich in tannins.

Therapeutic Uses

Fruits are the most useful part of the plant and are used medicinally in various diseases adopting different forms. Fruits are used for supplementing Vitamin C and other contents also. It is one of the most popular, common and highly reputed drugs of indigenous system of medicine. It is used in anemia, hyperacidity, peptic ulcer, dyspepsia, anorexia, diarrhoea, dysentery, hemorrhage, eye inflammations, irritability of bladder, leucorrhoea, spermatorrhoea, epitaxis', menorrhagia, jaundice, weak memory condition, nervine debility, oedema and liver condition. The juice of fresh fruit is given as tonic, refrigerant and antiscorbutic, diuretic, laxative and anti-bilious remedy.

Classification

The ancient authors classified the drugs in different gana, varga and skanda etc. The drugs have been classified on the basis of their morphological characters, properties and pharmacodynamic as well as therapeutic values. (Table 2)

Types of Triphala

Nighantu has mentioned three types of Triphala-

Swalpa Triphala

Draksha, kharjura, parushaka; these three fruits together is called Swalpa Triphala².

Madhura Triphala

Draksha, kharjura, kasmarya; these three fruits together is called swadu Triphala. It is beneficial to vision, appetizer, promotes desire for food, and useful in alleviating irregular fever.³

Sugandhi Triphala

Jatiphalam, ela, lavangam; these three constitute is called Sugandhi Triphala. It is astringent, sweet in vipaka and useful in breaking constipation due to kapha and vata doshas.

Rasa Panchaka

Ayurvedic Properties (Table 3)

Rasa - Kasaya

Guna - Ruksha, Sara

Virya - Anusna

Vipaka - Madhura

Doshagnata - Tridoshasamaka

Karma - Chakusys, Dipana, Vrishya, Prameha, Kustha, Vishamajwarnashaka, Medohara^{6,7}

Pharmacological Activities

Triphala classified as an important medicine of the Rasayana group and is believed to promote health, immunity and longevity and frequently used to treat chronic ulcer and it is an antioxidant rich herbal formulation. The aqueous extract of Triphala is reported as antigastric ulcer and anti-peptic activity, good radio-

protective agent against gamma radiation and cytotoxic to human breast cancer cell line. The extracts of Triphala reported to exhibited antimutagenic activity, reduce damage due to oxidative stress, possess sustained anti-diabetic activity and free radical scavengers, cytotoxic and apoptotic agent against breast cancer cells and prostate cancer and possess antibacterial activity. The powder of Triphala reported as promising anti-inflammatory and anti arthritic drug and as potent and novel therapeutic agents for scavenging of nitric oxide, as a cardio tonic drug which is also prescribed for symptoms of inflammation, heat, infection, obesity, anaemia, fatigue, Candida, poor digestion, assimilation, tuberculosis, pneumonia and AIDS.

Therapeutic Uses

It is used as laxative in chronic constipation, colon cleansing, digestion problems and poor food assimilation, cardiovascular diseases, high blood pressure, to reduce serum cholesterol, poor liver function, large intestine inflammation, ulcerative colitis. It is good rejuvenator, tonic, hair tonic and good for digestion, purgative, cure all diseases of eyes, heal ulcer, remove diseases of skin, fat, diabetes, blood and fever. Ratio of Triphala (1:2:4) - Several methods are given to prepare Triphala, some use equal proportions (1:1:1) and some authors prepare Triphala by mixing one parts of One Haritaki, two parts of Bibhitaki and four parts of Amalaki.

Chemical Constituents

Triphala has been reported to be a rich source of Vitamin C, ellagic acid, gallic acid, chebulinic acid, bellericanin, β -sitosterol, ascorbic acid and flavonoids⁸⁻⁹. Spectroscopic techniques including mass spectroscopy, nuclear magnetic resonance and Infrared spectroscopy showed gallic acid as the major component.¹⁰ Triphala also contains about 20 % tannins of both condensed and hydrolysable type. Other constituents identified in the fruit include lipids, sitosterol, saponins, cardiac glycoside and various carbohydrates.¹¹

Traditional Uses of Triphala

In Ayurvedic practice, Triphala is used for gastric disorders such as digestion problems, poor food assimilation, cleansing of colon, constipation and tonifier of the gastrointestinal tract and colon. It is also recommended to be used for cardiovascular disorders, high blood pressure, serum cholesterol reduction, ophthalmic problems, liver dysfunction, inflammation and complications of the large intestine.¹²⁻¹³ It is also used as a blood purifier, to improve the mental faculties and is reported to possess anti-inflammatory, analgesic, anti arthritic, hypoglycemic and anti-aging properties (Table 4).¹⁵

Pharmacology and Clinical Studies

Reported Activities of Triphala as 1:1:1 Ratio

Antihyperlipidemic effect of Triphala

Rats which were fed with a diet consisting of 4 % Cholesterol, 1 % cholic acid and egg yolk for forty eight days resulted in a significant increase in the total

cholesterol, LDL, VLDL and FFA making them hypercholesteremic. But administration of Triphala at 1 g/kg body weight daily for forty eight days caused significant reduction in total cholesterol, LDL, VLDL and FFA.¹⁴

Free Radical scavenger

Triphala has been found to be an excellent scavenger of hydroxyl radicals and superoxide radicals, peroxy radicals¹⁵, Hydroxyl radicals,¹⁶ and nitric oxide radicals.¹⁷ Naik *et al.* estimated the total free-radical scavenging ability of Triphala by employing non-biological and stable free radicals like 2,2-diphenyl-1-picrylhydrazyl (DPPH) and 2,2'-azino-bis (3-ethylbenzthiazoline-6-sulphonic acid (ABTS) antioxidant and radio protecting ability of Triphala arise from the polyphenols, which reduce oxidative stress by converting the reactive oxygen free radicals to non-reactive products. In another study Naik *et al.* revealed that all three constituents of Triphala are active. *E. officinalis* shows greater efficiency in LPO and plasmid DNA assay, while *T. chebula* has greater radical scavenging activity. Thus their mixture, Triphala, is expected to be more efficient due to the combined activity of the individual components.¹⁸

Immunomodulatory effect

Study by Srikumar *et al.* have shown that administration of Triphala enhanced the phagocytosis, phagocytic index, antioxidant activities and decreased corticosterone levels in animals exposed to noise stress.¹⁹

Anti-inflammatory and anti-arthritic effects activity

Rasool *et al.* evaluated the anti arthritic effect of Triphala. The physical and biochemical changes observed in arthritic animals were altered significantly to near normal conditions after oral administration of Triphala (1 g/kg/bw). In another study Rasool studied the efficacy of Triphala on monosodium urate crystal-induced inflammation in mice where significant inhibition in paw volume, levels of lysosomal enzymes, LPO and inflammatory mediator tumour necrosis factor- α was found.²⁰

Analgesic, antipyretic and ulcerogenic activities

The analgesic, antipyretic and ulcerogenic activities of Triphala (500/1000 mg/kg bw) were compared with the non-steroidal anti-inflammatory drug Indomethacin (10 mg/kg bw) on the experimental models in mice and it was found that Triphala at both the dose levels produced excellent analgesic and antipyretic effect, without any gastric damage.²¹

Anticancer Activity

The use of Triphala in diet has been shown to significantly reduce the benzo (a) pyrene induced stomach papillomagenesis in mice. It was observed that the concomitant use of multiple agents seemed to have a high degree of chemoprevention potential.²² The cytotoxic effects of aqueous extract of Triphala have also been investigated on human breast cancer cell line (MCF/7) and a transplantable mouse thymic lymphoma (barcl/95) which suggests that Triphala possesses the ability to

induce cytotoxicity in tumor cells but spares the normal cells.²³ Exposure of the human pancreatic cancerous cells, Capan-2 cells to Triphala for 24 hours caused a significant decrease in cell survival and induced apoptosis. Triphala failed to induce apoptosis in normal human pancreatic ductal epithelial cells.²⁴

Antibacterial activity

Srikumar et al. confirmed the antibacterial activities of aqueous and ethanol extracts of Triphala and its individual components against *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Shigella sonnei*, *Shigella flexneri*, *Staphylococcus aureus*, *Vibrio cholerae*, *Salmonella paratyphi-B*, *Escherichia coli*, *Enterococcus faecalis* and *Salmonella typhi* isolated from human immunodeficiency virus (HIV) infected patients.²⁵

Antidiabetic activity

The oral administration of Triphala extract in dose of 100 mg/kg bw reduced the blood sugar level in normal and in

alloxan (120 mg/kg) diabetic rats significantly within 4 hours and continued daily administration of the drug produced a sustained anti-diabetic effect.²⁶

Wound healing activity

Triphala extract ointment (10 % w/w) was assessed for in vivo wound healing on infected rat model by rate of healing, bacterial count, biochemical analysis, and expression of matrix metalloproteinases. Topical application of Triphala ointment on infected wound not only reduces the risk of infection but also improved the healing.²⁷

Clinical study of Triphala

Pulok et al. aimed to investigate Triphala clinically, which are being used for a long time for its effect on bowel movement and well being. The study evaluated the therapeutic efficacy of Triphala on constipated bowel habit and well being. No toxicity or adverse drug reactions were observed in the patients.²⁸

Table 1: Synonyms of Triphala in Samhitas and Nighantus

Synonyms	Ch. S	Su. S	As. S	Sh. S	M. N	Kai. N	B. N	Raj. N	Pri. Ni
Phalottama	-	-	-	-	+	+	-	-	-
Phalshresta	-	-	-	-	-	+	-	-	-
Phaltrik	+	+	-	+	-	+	+	-	-
Phaltraya	-	-	-	-	-	+	-	-	-
Triphala	+	+	+	+	+	+	+	+	+
Triphali	-	-	-	-	-	+	-	-	-
Vara	+	+	+	+	+	-	+	-	+
Sreshta	-	-	-	-	+	-	-	-	-

Table 2: Classification

Samhita and Nighantu	Varga
Charaka Samhita	Virechanopag Mahakasaya, Jwarhar Mahakasaya, Kasaya Skandha
Sushruta Samhita	Muskadi Gana, Parushkadi Gana, Mustadi Gana, Tripala Gana, Amalakyadi Gana, Kasaya Skandh
Astanga Hridya	Virecana Gana ,Parushkadi Gana,Muskakadi Gana,Mustadi Gana,
Astanga Sangraha	Virecanopayogi Dravyas,Jwarahara Mahakasaya, Parushkadi Gana, Muskakadi Gana, Mustadi Gana.
Dhanvantari Nighantu	Guduchyadi Gana, Mishrakadi Varga
Sodhala Nighantu	Guduchyadi Gana
Kaidev Nighantu	Aushdhi Varga
Madanpal Nighantu	Abhyadi Varga
Raj Nighantu	Mishrakadi Varga, Audhabhida Gana
BhavPrakash Nighantu	Haritkyadi Nighantu
Priya Nighantu	Haritkyadi Nighantu
Nighantu Adarsh	Haritkyadi Nighantu
Dravyaguna Vigyan	Rasayana Varga and Chednadi Varga

Table 3: Rasa Panchaka

Dravya	Haritaki	Vibhitaki	Amalaki	Triphala
Rasa	Panchrasa (Kasaya)	Katu	Panchrasa (Amla)	Kasaya
Guna	Laghu, Ruksha	Laghu, Ruksha	Laghu, Ruksha, Sita	Ruksha, Sara
Virya	Ushna	Ushna	Sita	Anusna
Vipaka	Madhura	Madhura	Madhura	Madhura
Prabhav	Rasayana	Chedana	Rasayana	Rasayana
Dosha-Karma	Vata	Kapha	Pitta	Tridosha
Karma	Anulomana, Caksusya, Dipana, Hridaya, Medhya, Sarvadosha-Prasamana	Caksusya, Kesya, Bhedaka, Krminasana, Kasahara	Vrisya, Caksusya	Caksusya, Dipana, Varnaropana, Rucikara, Medohara

Table 4: Action of Triphala Described in Various Ayurvedic Texts

S.N	REFERENCES							
	Properties / action	Ch. S.	Su. S	A. H	Bh. P. S	H. S	Sar. S	Kai. Ni
1.	Rasayana	+	+	+			+	+
2.	Kaphapittaghna	+	+	+	+	+	+	+
3.	Deepan		+		+	+	+	
4.	Ropan	+		+				+
5.	Mehaghana	+	+	+	+			+
6.	Vishamjwarnashan		+		+	+		
7.	Netrarogaghna		+	+	+		+	
8.	Medohara	+		+			+	+
9.	Kusthagna		+	+	+	+	+	+
10.	Kledahaphasranashna m			+				+
11.	Vranashodhana					+		
12.	Varnadayini					+		
13.	Kanduhara					+		
14.	Yonigulmashaman					+		
1.	Rasayana	+	+	+			+	+

Classical Preparation of Triphala

Triphala is widely used in making Ayurvedic medicines. Triphala is part of some of the most prestigious classical Ayurvedic preparation. Some of these are:-

- Triphala Guggulu
- Triphaladi Ghrita
- Chandraprabha vati
- Arogyavardhani vati
- Triphala kwath

CONCLUSION

All the studies effects may be due to the proportionate increase in the levels of *T. bellerica* Linn., *T. chebula* Retz. and *E. officinalis* Gaertn. in the Triphala. Both *T. bellerica* and *E. officinalis* are well-established rasayana (rejuvenator) drugs with powerful antioxidant and free radical scavenging effect. The Triphala 1:2:4 formulations contain a higher proportion of such antioxidants which would be responsible for its significant effect on hyperlipidemia against Triphala 1:1:1 formulation.

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