

A REVIEW: HEALTH BENEFITS OF TERMINALIA CHEBULA, ROSA CANINA, & MORINGA OLEIFERA

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Article Received on
03 March 2023,

Revised on 23 March 2023,
Accepted on 13 April 2023

DOI: 10.20959/wjpr20236-27900

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ABSTRACT

Terminalia chebula, *Rosa canina* & *Moringa oleifera* are well known plants for their health benefits with medicinal value. *Terminalia chebula* belong to the family combretaceae. It is called as king of medicine. It is reported to possess anticancer, antidiabetic, immunomodulatory antimicrobial, antiviral, cardiogenic, antioxidant, antiviral, cardiogenic, antidiabetic, immunomodulatory activities. But no systematic updated information on the therapeutic effectiveness of plant a popular herb in India and South-East Asia has been reported. A number of chemical constituent have been isolated from the plant

extract the include gallic acid, chebulin, ellagic acid gallic acid etc. *Terminalia chebula*, commonly called as black myrobalan, ink tree. Myrobalan is the most important medicinal plants used in medicines of ayurveda, unani siddha, unani and homeopathy. *Rosa canina* contains high concentration of carotenoids use of rose product of health benefits. *Rosa canina* & *Moringa Oleifera*, consist of rose hip which is rich in vitamin C and E & is widely used for many medicinal preparation. Now a day's rose hip extract is extensively used to treat osteoarthritis.

KEYWORDS; Carotenoids, Antimicrobial, Myrobalan, Cardio tonic, Osteoarthritis, Antioxidant.

INTRODUCTION

Ayurveda is 5000 years old traditionally rooted in ancient Indian culture. According to WHO a major part of world population depends on plant based traditional medicine for their primary healthcare need.^[1] *Terminalia chebula*, *Rosa canina* and *Moringa Oleifera* plants are beneficial to humans and have a great medicinal properties. *Terminalia chebula* belongs to

family Combretaceae. *Terminalia chebula* as a popular traditional medicine, not used only in India but also in other countries of Asia and Africa centuries.^[2]

In traditional medicine, the fruit of the *T. chebula*, which hold various chemically active compounds responsible for its medicinal properties. It has been used in Unani, Ayurvedic, and homeopathic medicine since geriatric diseases and improve memory brain function. *Terminalia chebula* is also commonly used to treat numerous disease such as cancer, cardiovascular, diseases, paralysis, leprosy, ulcers diseases, paralysis, leprosy, ulcers, epilepsy, cough, fever, diarrhea, gout, arthritis, epilepsy, cough, fever, diarrhea, gastroenteritis, skin disorders, urinary tract infection etc.^[3]

Terminalia chebula consists of 250 species and widely dispersed in tropical area of the world. It is used to prevent aging & impart longevity, enhances immune system response and body resistance against diseases.^[4]

It has a beneficial effect on tissues. *Terminalia chebula* has been a major source of therapeutic agents since old times. Rosehip is the pseudo fruit of *Rosa canina* L. consist of an urn-shaped holder with rose hip very rich in vitamin E, C and it is widely used for medicinal preparations. A rose hip fruit powder which is marketed as a food supplement in several european countries have been approved shown to reduce osteoarthritis symptoms in the clinical trial.^[5]

Rosehip has long been used in herbal tea. In addition to ascorbic acid rose hip is also rich in phenols, and carotenoids, which are the very important dietary antioxidants.^[6] Rose hips, the fruits of rose plants (*Rosa* sp.) have been found to be rich in polyphenols (triterpene acids, proanthocyanidins, flavonoids, catechin), essential fatty acids, folate, galactolipid, vitamin A, C,D and E, minerals (Ca, Mg, K, S, Si, Se, Mn and Fe), among other bioactive components.^[7] The extracts have been proven to possess anti-inflammatory, antioxidant, immunomodulation, anticancer, neuroprotective, cardio protective, ant diabetic, antimicrobial properties.^[8] Orally, rose hip is also used for the stomach disorders including stomach acid stomach spasms, deficiency, prevent stomach irritation and ulcer, and as a "stomach tonic" for intestinal diseases.^[9] Rosehip is also used for constipation, gallstones, diarrhea, gallbladder ailments, lower urinary tract, and kidney disorders, fluid retention (edema), gout, back and leg pain (sciatica), diabetes, high cholesterol, high blood pressure, weight loss, fever, increasing immune function during exhaustion, increasing blood flow in the limbs,

increasing urine flow and quenching thirst. Topically, rose hip is used for stretch marks. In foods, rose hip is used for tea, jam, soup, and as a natural source of vitamin C.^[10]

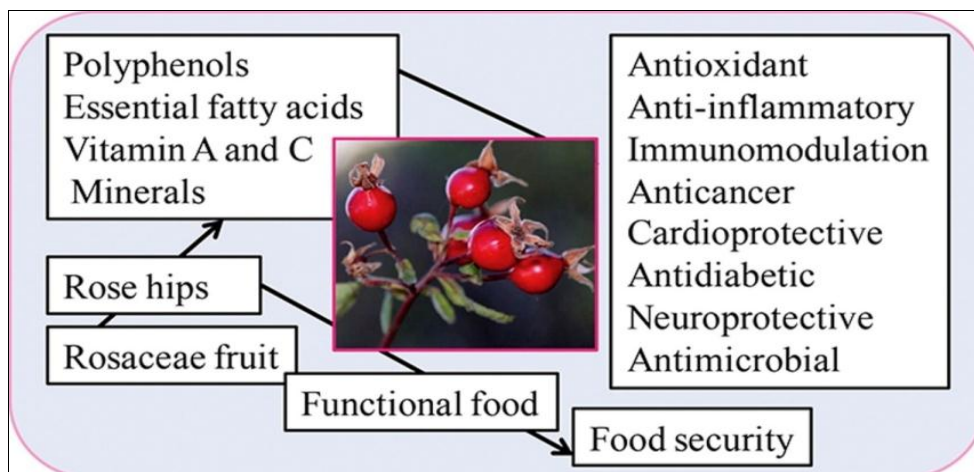


Fig.1: Rosa Canina.



Fig 2: Terminalia chebula.

BOTANICAL DESCRIPTION

Terminalia chebula

Terminalia chebula is medium size plant about up to 28 feet in height.^[11] It has a round crown and spreading different different branches. The bark is dark brown with a few longitudinal cracks. The flowers appear May to June, and fruits July to December. The fruit size 1-3 inches. It has six lines or six ribs on the external skin. It consists of the pericarp of mature fruit of Terminalia chebula, a moderate or large tree found throughout India mostly in deciduous forests and areas of light rainfall but irregularly also in slightly moist forest up to about 1300 meter elevation all through India, flowers appear from April-August and fruits ripen from september to January.^[12]

Classification

Current name: *Terminalia chebula*

Kingdom: Plante

Division: Magnoliophyta

Class: Magnoliopsida

Order: Myrtales

Family: Combretaceae

Genus: *Terminalia*

Species; *Chebula*

Rosa canina

Rosa canina is a plant introduced from Eurasia. It grows up to 10 feet tall and has various arching stems. Fruits grow in september to october, smooth, bright red in color and 0.7 to 0.9 inches long.

Classification

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Rosidae

Order: Rosales

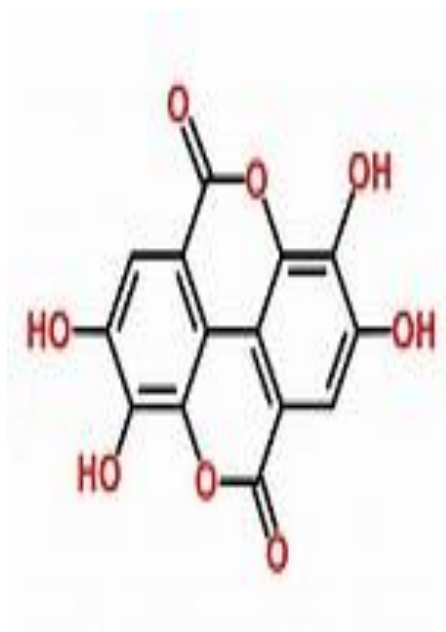
Family: Rosaceae

Genus: *Rosa* L.

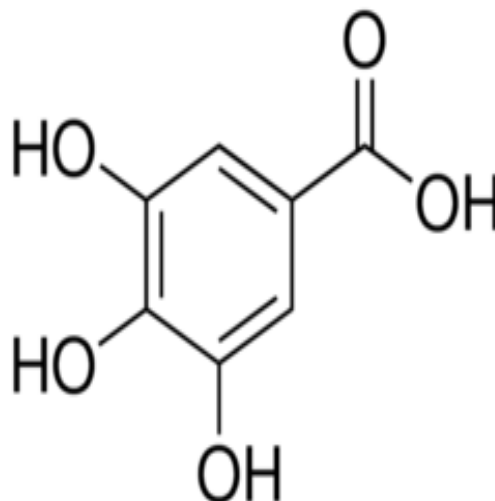
Species: *Canina*

PHYTOCHEMICAL CONSTITUENT

Terminalia chebula contains tannin up to 35%, chebolic acid 4-6%, chebulinic acid 40%, tannic acid 35-45%, ellagic acid, 2,4-chebulyi- β -D-glucopyranose, ethyl gallate, gallic acid, punicalagin anthraquinone, terflavin, some flavonoids like luteolin, rutin, and quercetin terchebin, are also obtained from *T. chebula*.



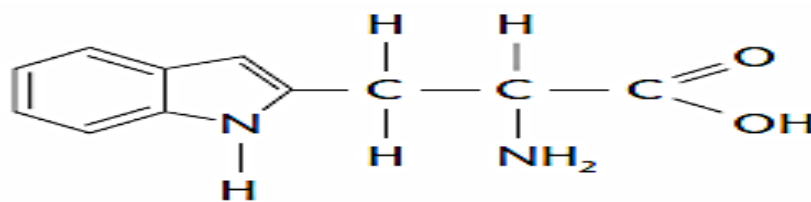
Ellagic acid



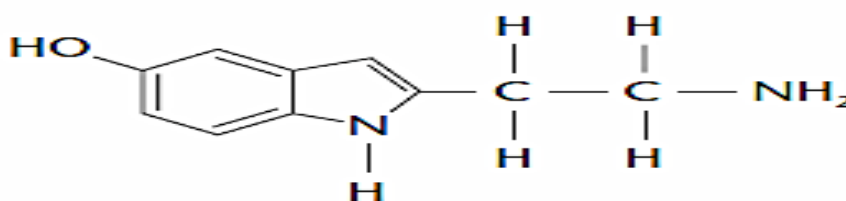
Gallic acid

Fresh rose hips contain 0.6-1.7% vitamin C and some amount of vitamin E. However, the vitamin C content of dried, commercially presented rose hip product varies considerably.^[13]

Some authors advise that rose hips are the rich natural source of vitamin C. Because a significant amount of natural vitamin C in rose hips may be destroyed during drying and processing, many “natural vitamin supplements” have some form of vitamin C added to them.^[14]



Tryptofano



Serotonina

Moringa oleifera

Moringa oleifera is an excellent remedy for malnourishment belonging to the family Moringaceae. Moringa is a rich source of nutrients a variety of necessary phytochemicals

present in its leaves, pods and, seeds. Moringa provides seven times more vitamin C than oranges. *Moringa oleifera* can grow in adverse situation also & requires little care. It requires loamy mud with a slightly acidic to slightly alkaline pH.^[15,16]

Moringa oleifera is widely found in the Indian sub-continent. It is a deciduous tree, fast-growing, drought resistance, having a height of 10- 12 meters.^[17]

Moringa possesses many necessary nutrients such as vitamins, minerals, amino acids, beta carotene, antioxidants, anti-inflammatory nutrients & omega 3&6 fatty acids.^[18]



PHARMACOLOGICAL INVESTIGATION OF TERMINALIA CHEBULA

Hepatoprotective

It was considered important since the ancient times to regulate the liver physiology in haemorrhoidal conditions and its fruits are a rich source of chebolic acid, tannin and ellagic acid that acts as an astringent and hepatoprotective. It is well known that portal hypertension can be an important etiological factor in the development of hemorrhoids.^[19]

Anti-spasmodic

T. chebula exhibited anti-spasmodic action on smooth muscle similar to that of papaverine.

Nephroprotective

The chloroform extract of *T. chebula* exhibited significant renoprotective activity and also more effectively inhibited the incidence of diabetic nephropathy.^[20]

Cytoprotective

The ethanolic extract of *T.chebula* fruit exhibited a notable cytoprotective effect on the HEK-N/F cells and also significant cytoprotective effect against UV-induced oxidative damage.^[21]

Anti-viral

Aqueous extract of *T. Chebula* inhibited HIV Protease at the concentration 0.2 mg/ ml. Water extract of *T.chebula* inhibited the DNA polymerase activity of the Hepatitis B virus. Methanolic extract of fruit showed significant inhibitory effects on human immune deficiency virus - I reverse transcriptase.^[22]

Laxative

Anthraquinone derivatives exhibit laxative action by stimulating the mucous membrane to lead to an increase in secretion of mucus i.e stimulating peristalsis. Tender fruits of *Terminalia chebula* remove constipation and rectal spasm. It is safe and effective i.e. gentle laxative. The laxative principle in the pericarp of the fruit has been found to be a glycoside anthraquinone.^[23]

Anti-diabetic

T. chebula fruit and seeds exhibited the dose-dependent reduction in blood glucose of streptozotocin-induced diabetic rats. Triphala extract has reduced the blood sugar level in normal and alloxan (120mg/kg) induced diabetic rats significantly. Healing is much faster as indicated by improved rates of contraction and decreased the period of epithelialization. Because of the significant increase in total protein, DNA and collagen contents in the granulation tissues of treated wounds, tensile strength increased by about 40%.^[24]

Anti-inflammatory

Gallic acid (3, 4, and 5- tri hydro benzoic acid) is one of the main endogenous phenolic acids found in *Terminalia chebula* which possess the anti-inflammatory activity.^[25]

Antifungal

Methanolic extract of *T. chebula* exhibited antifungal activity against *Candida albicans*, *Trichophyton rubrum*. Seed extract exhibited antifungal activity against *Trichophyton glabrate*.

Anti urolithiasis

In their study, the aqueous extract of the fruit of *Terminalia chebula* in Wistar albino rats decreased the elevated levels of oxalate and phosphate in urine as well as kidney tissue homogenate.^[26]

Anti-bacterial

T. chebula exhibited antibacterial activity against a number of both Gram-positive and Gram-negative human pathogenic bacteria such as *Clostridium perfringens* and *Escherichia coli*, *Helicobacter pylori*, *Staphylococcus aureus*, *Streptococcus mutans*, *Salmonella typhi*, *Klebsiella*, *Shigella*.^[27]

Anticaries agent

T. chebula is an anti-plaque forming drug which can be of great help for dental caries. *Triphala* showed the bacteriostatic or bacteriocidal effect on gram-positive and gram-negative pathogens. *Triphala*'s fruit is rich in citric acid, showed the property of chelation and helps in the removal of the smear layer from the walls of the root canal.^[28]

Radioprotective

The aqueous extract of *T. chebula* prior to whole body irradiation resulted in a reduction of peroxidation of membrane lipids in the mice liver as well as a decrease in radiation-induced damage to DNA. It also protects the human lymphocytes from undergoing the gamma radiation-induced damage to DNA uncovered *in vitro*.^[29]

Chemopreventive

T. chebula had the chemopreventive effect on nickel chloride –induced renal oxidative stress, toxicity and cell proliferation response in male Wistar rats.^[30]

Hypocholesterolemic

Ethanol extract and ethyl acetate fractions of fruits were found to possess significant hypolipidemic activity. The most active extract was the ethyl acetate fraction of immature fruits, which was able to bring high serum lipids to the normal level.^[31]

Increases longevity

The extract of *Harad* is an amazing heart tonic. You do not have to do much to get the benefits of the fruit. Just add 1 tea spoon of the *Harad* extract in one beaker of water and drink it once daily; you will obtain robust heart and health?

Improves the digestion

You get increased metabolic strength by having tonics containing *Haritaki* fruit. The digestive system gets a boost. *Haritaki* helps to reduce the stomach spasms. People with acid reflux will benefit from taking the *Haritaki* health tonic preparations. It has proved effective in

treating stomach rumble since the olden times. You can treat ulcer with the health tonics containing harad.^[32]

Balances the three doshas

If you receive it with ghee, it will balance the Vata dosha. When you take it with rock salt, it balances the water (Kapha), and to balance the fire (Pitta), you must have it with the sugar. When one balances the doshas well, the internal fire of the body is ignited, and one feels energetic.^[33]

Improves skin tone

The *Terminalia chebula* is a skin loving substance. It will improve the youthfulness of the skin, especially on the face and eliminate the wrinkles. The dried skin cells fall off, and the bounce and elasticity of the skin improve. You can use it for all kinds of skin blemishes too.^[34] To treat burns, you must mix the *Terminalia chebula* extract with vaseline cream and apply it on the burn. To remove acne and blackheads, make a paste of *Terminalia chebula* powder and apply it on the face. If you have any allergies caused by nose rings or earrings etc. you can use the same paste along with sandalwood paste to get a cure. Mixture applied day and night on the spot where you contain the allergy. Rapidly, the allergy will disappear.^[35]

Helps relieve constipation

The natural laxative property of the fruit is helpful for relieving the symptoms of constipation. The dietary fibers in the extract of Harad are helpful in regulating the bowel movement.^[37] This improved bowel movement will relieve constipation and digestive elements help to move the food in the GI tract.^[37]

Good nourishment

The good nourishing nature of the *Terminalia chebula* fruit helps to refresh all the organs in the body. The person puts on weight due to the improved health conditions.^[38]

Use in treating piles

To treat piles, take a large flat pan and fill it with water. Add two tablespoons of Haritaki powder and stir. You can prefer warm water. Lower your sitting bones into the water. Wait for ten minutes. Do these before you have your bath. Soon you will have permanent assistance from your problem.

Relieves asthma

Another good effect of the *Terminalia chebula* fruit is the way it relieves the symptoms of asthma patients. The usual treatment for the asthma patient is to chew two dried fruits before sleep.

Treat anemia

Those that have anemia will help if they take Haritaki. Heat some ghee in a pan and mix two heaped teaspoons of *Terminalia chebula* powder in it. Give this daily to the person suffering from anemia. After some weeks, you detect a marked improvement in the health condition of the person.

Helps people with baldness

The fruit promotes hair health and so if you apply this paste on the head regularly, soon the hair will become healthy. After stopping the hair falling, it will help the hair growth.

Cures pleurisy

If you want relief from pleurisy, you can use *Terminalia chebula* extract of Harad taken with honey will relieve the pain due to the swelling in the lining of the lungs.

PHARMACOLOGICAL INVESTIGATION OF ROSA CANINA

A cold infusion of its fruits is used as a gargle in stomatitis and in chronic ulcers, carious teeth, in a cough, asthma and urinary diseases. A fruit extract issued as the wash in watering eyes and fruit paste in burns. Fruit powder is soaked in water overnight in an earthen pot and eyes are washed with this water in the morning for eye problems. Fruit paste with turmeric powder is applied for inflammation of eyes. The oil also contains high levels of valuable fatty acids, including, linoleic, and oleic fatty acids.^[39] Although these products have been used previously as nutritional supplements, they also have been used as mild laxatives and diuretics. Rosehip syrup was used as a nourishing drink for children and to flavor teas and jams.^[40] Most research shows that taking a specific rose hip product by mouth twice daily for 3-4 months reduces pain and stiffness and improves function in people with osteoarthritis.^[41] Early research shows that taking rose hip powder diverse with apple juice does not affect weight or blood sugar levels in people who are obese. But it might a little reduce cholesterol and blood pressure.^[42]

Rheumatoid arthritis

Early research shows that taking a specific rose hip product by mouth improve some symptoms of rheumatoid arthritis.

Stretch marks

Early research shows that applying a specific cream containing rosehip oil and other ingredients (Velasita Antiestrías,) to the skin at least twice daily during pregnancy reduces the severity of stretch marks. It also might reduce the chance of getting stretch marks in women who didn't have stretch marks before becoming pregnant.^[43]

- Boosting the immune system.
- Diarrhea.
- Fever.
- Infections.
- Preventing and treating colds.
- Stomach irritations.
- Other conditions.

Prevents cancer

Rosehip extract contains a variety of antioxidants such as Polyphenols, carotenoids, and flavonoids. All these antioxidants can neutralize free radicals that cause oxidative stress or cellular rust. The pure rose hip extract can prevent the growth of cancer cells.^[44]

Reduces cholesterol

The antioxidant components present in rose hip helps to decrease cholesterol. The daily consumption of rose hip extract could remove the risk of heart disease.^[46] Rosehip tea is good for those who are obese, for it not only controls cholesterol but also elevates systolic blood pressure.^[45]

CONCLUSION

Terminalia chebula is very good source of diverse kinds of phytochemicals that can be used for development of novel drugs. Harad is very beneficial plant for us in other words it is a boon for humans. The fruits are very easily available & are not costly there should be awareness in general population regarding its use & its amazing health benefits. *Rosa canina* has great health benefits and rich in vitamins and antioxidant properties. Now a day rose hip extract is successfully used to treat arthritis, it reduces the pain & stiffness of joints in both

osteo & rheumatoid arthritis. Topically rose hip is used for stretch marks. In food, rose hip is used for tea, jam, soup, and as a natural source of vitamin C.

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