

VERSATILE (*BUCHANANIA LANZAN* L): A COMMENDABLE NUTTY SEED OF ENORMOUS POTENTIALITY FOR WELLBEING**Bina Rani¹, Upma Singh², Lakha Ram³, Khumbha Ram Mahala⁴ and Raaz K. Maheshwari^{4*}**¹Department of Humanities & Applied Sciences, IIMT College of Engineering, Gautam Buddha Nagar, Greater Noida, (U.P.) India.²Department of Applied Chemistry, School of Vocational Studies & Applied Sciences, Gautam Buddha University, Gautam Buddha Nagar, Greater Noida, (U.P.) India.³Department of Chemistry, JNMP Govt PG College, Phalodi, Jodhpur, (Rajasthan) India.⁴Department of Chemistry, SBRM Govt PG College, Nagaur (Rajasthan) India.***Corresponding Author: Raaz K. Maheshwari**

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ABSTRACT

All parts of this plant, be it nuts or seeds, fruits, oil, roots, kernels, or gum, are a host of many medicinal values and offer several health benefits. Most traditional medicine formulations have this chironji plant part. *Chironji* is low in calories, but extremely rich in protein and dietary fibre, which keeps hunger pangs at bay, leading to satiety and eliminating the need to eat more often. Chironji has a unique taste which is slightly sweet, slightly acidic similar to the flavor of almonds. *Chironji* has many essential vitamins and minerals including vitamin C, vitamin B1 and B2, as. *Chironji* is also extremely rich in minerals like calcium, iron and phosphorus. Chironji is full of fiber, mineral, proteins, vitamins, and other nutrients, and Antiflatulent, anti-inflammatory, antiviral, antibiotic, antibacterial, antidepressant, expectorant, astringent, digestive, antidiabetic, cooling and many other clinical properties. *Chironji* seed oil has astringent properties, and can help in regularising bowel movements. The Fruits and Seeds of Chironji plant contain various essential oils and bioactive compounds viz. 8-cineole, Camphene, Flavonoids, Galactosides, Myrcene, Sabinene, Triglycerides, Tannins, Y-terpinene. All these compounds and effects of chironji make it a natural medicine for various ailments. The review paper precisely delineates phytochemistry, therapeutic attributes, traditional significance and culinary uses.

KEYWORDS: Antiflatulent, anti-inflammatory, antidepressant, expectorant, a stringent, oils, 8-cineole, Camphene, Flavonoids.

INTRODUCTION

Chironji is a medium-sized sub-deciduous, evergreen tree (Fig. 1) that grows up to 18 meters tall with a straight trunk and tomentose branches. The tree is found growing in open and dry forests, lowland forests, and moist deciduous, dry deciduous and semi-evergreen forests. The plant avoids waterlogged areas, but occurs on yellow sandy loam soils. It undertakes great significance due to its diverse uses and capacity to withstand adverse climatic conditions. At present, it is growing under forest condition as an under exploited fruit and gives monetary reward to tribal community of the country.^[1] Being a member of the *Anacardiaceae* family, it has its own importance by having multipurpose uses. Chironji (*Buchanania lanzan* L.) is a tropical evergreen, underutilized nut fruit and is native to India.^[2]

Chironji tree widely grow in Vietnam, Thailand, Burma, Laos, and Yunnan. The tree grows naturally in the

tropical regions of North, West, and Central India Chironji plays an important role in lives of tribal people in southern and northern tropical dry deciduous forests in both medicinal and as income generating with fruit kernels for better livelihoods and tree capacity to withstand adverse climatic conditions. Fruit kernels are eaten raw or roasted and also used in making dessert, which is rich source of protein, fat, starch, vitamins and minerals and yields sweet oil, which can be used as substitute to olive and almond oil. The tree provides food, fuel, fodder, timber, lac and has medicinal properties.^[3] The tree bark (Fig.2) has a thickness of 1.25 to 1.75 cm, with gray to brown outer and red to brown inner surfaces. The bark is moreover channeled and fibrous. The tree has thick, alternate, exstipulate, and simple leaves. The petiole of the leaves (Fig. 4) is in 12 to 22 mm in length, glabrous, and stout. At the same time, lamina is 10 to 23.5 cm x 5 to 12 cm, with a round base, broad, rectangular, and lateral nerves are 10 to 20 pairs, prominent, pinnate, and intercostal reticulate.^[4]



Fig. 1. A tree of Chironji.



Fig. 2. Bark of the Chironji.



Fig. 3. Fruit of Chironji.



Fig. 4. Leaves of Chironji.



Fig. 5 Flowers of Chironji.

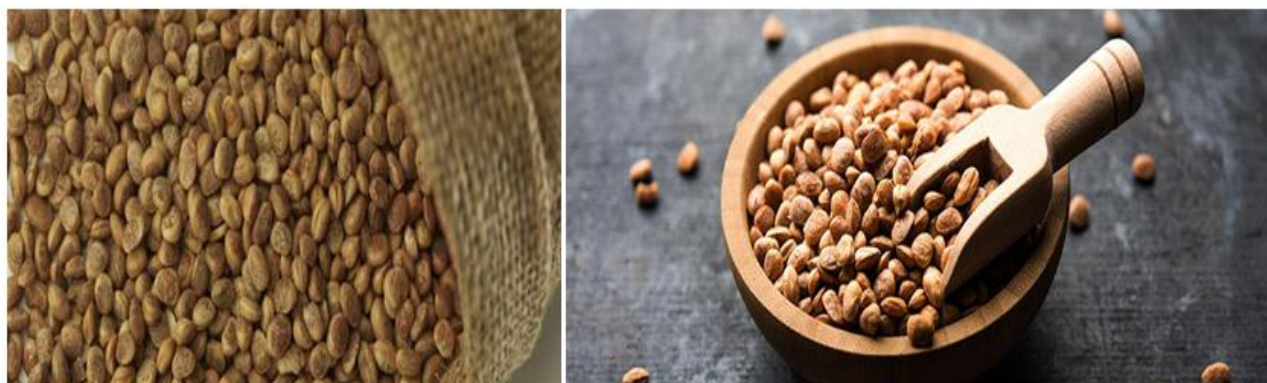


Fig. 6 Seeds of Chironji.

The fertile flowers are followed by ovoid reniform, drupe, with a size of 10 to 13 x 8 mm, black and oblong. The tree has a hard two valved stone that holds one seed. Fresh fruits are green in color and turn to purplish-black once matured, which takes almost 4 to 5 months. The harvesting is done manually in April and May. The fruits are 0.4 to 0.6 cm long and 0.3 to 0.5 cm wide. They are oval-shaped and in creamy brown color, flat, compressed with dark brown color lines. A tree yields almost 1 to 5 kgs of chironji seeds. The seeds should keep in a closed container; otherwise, it will lose its flavor and taste bitter. Chironji, also known as charoli, is often used as a substitute for almonds and considered full of healthy nutrients as it contains a considerable amount of dietary fiber. When consumed, Chironji provides vitamin B2, vitamin B1, vitamin C and niacin. All parts of the Chironji plant from the fruits, seeds (Fig. 6), leaves and roots are useful in making traditional medicines. Chironji is used for healing cough, skin rashes, infertility, headache, respiratory disorders, mouth ulcers and constipation. In addition to being very popular for its delicacy, Chironji seeds are most commonly used as ingredients in the making of most Indian sweets and other savory items.^[6,7]

Therapeutic Attributes

Chironji seed oil has astringent properties, and can help in regularizing bowel movements. It helps in binding stool particles together, and hence, cures diarrhea. Just a few drops of the oil may be added to your oral re-hydration solution, or ORS, and consumed to treat the problem of loose stools. Chironji root extract is supposed to be beneficial for treating ulcers that are indicative of stomach troubles. More and more people are becoming susceptible to diabetes in recent times. A lot of factors including an unhealthy diet, lack of play time or hereditary factors are some of the reason behind this. The leaf extract of the chironji plant has anti-diabetic properties, according to some studies. Chironji seed is rich minerals and vitamins and are very beneficial for the healthy skin. For a beautiful and glowing skin powdered Chironji seeds are added to milk to make paste and used as face mask for 15 minutes daily. These seeds are also very useful when used as scrubs as they remove and exfoliate dirt and dead cells there by cleansing skin as well as removing the facial hair. Additionally, the seeds also help to prevent skin infections such as acne and pimples. It can also be used to treat skin infections by mixing it with rose water and applying to the affected areas. The Chironji oil has highly contributed to the cosmetic industry in making natural cosmetic products that are skin friendly.^[9]

Chironji seeds are rich in vitamins and mineral, which makes them a super food, one that fights against all kinds of diseases and health problems. These seeds boost our immunity system and are therefore crucial for your child's immunity, since children are more susceptible to diseases than adults due to their developing immune system. Gum of Chironji can help to deal with certain

health problems. As the consequence, it has shown that the gum is dissolved in cow's milk and used to treat rheumatic pains. Hence, if you want to find the natural treatment for the rheumatic pains, then Chironji is something that should be taken into account. Blocked nose can easily be cleared by taking steam with water infused with a few drops of chironji oil. The mucous in the nasal passages is removed almost instantly. Chest congestion and nasal congestion can be relieved very easily using chironji seeds since they possess expectorant properties. Therefore, if your child is suffering from these respiratory issues, you can try to include chironji seeds in the treatment for that. Chironji oil is an effective cure for treating problems relating to the reproductive system.^[12]

Seeds have aphrodisiac properties and therefore are used in treating sexual and reproductive problems such as premature ejaculation, impotence and loss of libido. In parts of India, it is a tradition that newlywed couples start their married life by eating sweets and nutritious drink made from chironji seeds. It is supposed that it will boost their vitality and sexual ability. Both chironji seeds and chironji oil are known for their anti-inflammatory properties. Chironji seeds can help to provide instant relief from burning sensations in various parts of the body. Chironji oil also helps to relieve itching, rashes, blemishes etc. on the skin. The oil is also effective in treating scars and various skin infections. It can also help to provide relief from inflammation and pain in the joints. Research has shown that chironji seeds help in healing wounds very fast and also facilitate tissue remodeling. Researchers have shown that Chironji seeds are useful to purify the blood. Indeed, by acting as a blood cleanse, then it will result in the improvement of blood circulation. Also, by purifying the blood, charoli will help to remove the toxins and stress hormone in the bloodstream.^[11]

One of the numerous health benefits of chironji seeds is that it helps in improving memory and thus, helps in promoting the health of the brain. Your child is growing up with all his organs rapidly developing. It is also the age when one's mental and cognitive functions develop properly. So, it will be extremely beneficial to feed your child chironji seeds. Traditional medicine made using the Chironji plant has been used to treat mouth ulcers. Chironji is also supposed to have a cooling effect on the body in addition to its treatment of the digestive problems which contributes to treatment of ulcers.^[12] Chironji as a kind of nutritional seeds will help you to relieve itchiness on your skin. Besides, not only for that, the great nutrients contained in it are valuable to deal with certain skin problems including prickly heat, rashes, and skin spots. Moreover, to use the Chironji as the beauty treatment, then you can use it as the ointment as well. Chironji plant has been used to make traditional medicine. These medicines were usually given to the mother after child birth. This is because the nutrients contained in the Chironji extract are known to have

properties that stimulate the immunity. Another healthy benefit part of the chironji is its leaves. The juice extracted from these leaves has strong aphrodisiac, expectorant and purgative properties. The juice is also used to strengthen the heart as a cardio tonic. It's a good natural tonic for relieving fatigue and the leaves can be powdered to treat the wounds as well. Another great health benefit of chironji seeds is the way it acts as a tonic. Indeed, with this function, chironji seeds will help your child to relieve the fatigue and chronic tiredness that result from too much of playing and studying. Alternatively, a healthy diet goes a long way in relieving one of fatigue and tiredness.^[13]

Traditional uses and benefits of Chironji

Gum obtained from the tree is used as treatment for leprosy. Roots are used against diarrhea, the leaves against skin ailments. Fruits are used against coughs and asthma. Chironji seeds are used in the Ayurveda and Unani systems of medicine. Roots are acrid, astringent, cooling, depurative and constipating. They are useful in the treatment of diarrhea. Leaves are used in the treatment of skin diseases. Fruits are used in treating coughs and asthma. Ayurveda medicine uses all the parts of this tree for its varied medicinal properties in treating cold, bowel disorders, premature ejaculation, fever and rheumatism. Gum extracted from the bark of this tree and powder of the roots and dried leaves mixed with buttermilk is a traditional remedy for treating diarrhea. In the folklore medicine of Andhra Pradesh, Chironji gum was mixed with cow's milk for relieving rheumatic pain and they also used the leaves as a tonic for supporting cardiac functions.^[14]

Leaf powder was also used in encouraging quick healing of wounds. Powdered seeds blended with milk and turmeric powder is used in India since as a natural face pack for augmenting the glow, complexion and suppleness of the skin. Juice or the decoction of the Chironji leaves is used in Unani medicine for purifying the blood, treating loss of libido, impotency and also as a tonic for the digestive system. Adding 3 drops of Chironji oil in cool bathing water can help in relaxing the lining of the stomach and intestines, binding the stools and regularizing the bowel movements. Inhaling the aroma of this oil by adding 2 drops to your diffuser or vaporizer can aid in overcoming loss of appetite. Chironji oil is applied on hair to relieve grey hairs. Oil extracted from kernels is applied on skin diseases and also used to remove spots and blemishes from the face. Root is used as expectorant, in biliousness and also for curing blood diseases. Gum after mixing with goat milk is used as an analgesic. Bark or leaf paste of *B. lanzan* and *Diospyros melanoxylon* mixed with a glass of water is given twice daily to treat snakebite. Ointment prepared

from the kernel is used to relieve itch and prickly heat. Gum from the bark is used for treating diarrhea and pains, while leaves are used for the treatment of wound and skin diseases.^[15]

Culinary uses

Seed can be consumed raw or cooked. It has an excellent flavor, somewhat reminiscent of almonds or pistachios. It can also be eaten as a dessert seed and also used in sweetmeats.

In some parts of India the dried fruit and seed are baked together to make a sort of bread. They are ground into powders for thickening savory sauces and flavoring batters, and stewed into rich, meaty kormas. After the hard shell is cracked, the stubby seed within is as soft as a pine nut. Fruit has a pleasant, sweetish, sub-acid flavor. Fruits can be eaten fresh, or dried for later use. Oil is obtained from the seed. Light yellow oil can be used as a substitute for almond or olive oil. They are commonly used in sweets in India. They are also ground into powders for thickening savory sauces and flavoring batters, and stewed into rich, meaty kormas. Chironji seeds are widely used in Indian sweet and savoury dishes. Chironji is believed to be an aphrodisiac as well. Chironji is rich in proteins and fiber, as well as vitamins and minerals.

Most Indians have very fond memories of the delicious and evergreen *kheer*, made from milk and rice and flavoured with Indian spices and topped with a number of nuts and raisins. The flavour of soft rice boiled in milk along with cardamom powder and cinnamon powder has been branded in our brains as something that defines a special occasion. But, besides being a mood food, *kheer* is also incredibly nutritious, due to the presence of the nuts, particularly almonds, pistachios and a festive nut that isn't much talked about -- *chironji dana*, or *chirola*. *Chironji* seeds are used in a host of Indian desserts including variants of the *kheer* (also known as *payasam*) and various different kinds of *halwas*. *Chironji* seeds are often used as alternatives to almonds in these sweet dishes. These are also used in Ayurvedic medicines and are harvested from a tree called *Buchanania lanzan*, which is a native to the Indian subcontinent.^[16]

Nutritional Content of Chironji

Chironji seeds are a good source of protein. It contains low calorific values and fat content, with that the seeds are a great addition to your daily food routine. It has a good amount of fiber content that helps in digestion. It has an array of nutrients such as Vitamin B1, B2, C, niacin, and minerals like iron, phosphorus, and iron.^[17-20]

Nutrition	Value	% RDA
Water	3 grams	3%
Energy	656 calories	N/D
Protein	19 – 21.6 grams	19 – 21.6%
Fat	59 grams	59%
Fiber	3.8 grams	3.8%
Carbohydrate	12.1 grams	12.1%
Minerals		
Calcium	279 milligrams	27.9%
Iron	8.5 milligrams	8.5%
Phosphorus	528 milligrams	58.6%
Vitamins		
Vitamin C	5 milligrams	6.6%
Vitamin B1	0.69 milligrams	83%
Vitamin B2	0.53 milligrams	40%
Niacin	1.5 milligrams	9.3%

Chemical Constituents of Chironji

The Fruits and Seeds of Chironji plant contain various essential oils and bioactive compounds viz. 8-cineole, Camphene, Flavonoids, Galactosides, Myrcene, Sabinene, Triglycerides, Tannins, Y-terpinene. 8-cineole. Chironji seed kernels hold 50 to 52% of essential oil. The oil extracted from chironji fruits is called 'char' in India with various clinical uses and acts as a tonic and an expectorant.^[19-20]

CONCLUSION

Buchananania Lanzas leaf extract is rich source of Phytochemicals like Tannin, Phenol, Steroids, Glycosides, Flavenoids etc. plant extracts in different solvent system confirms the presence of diverse group of phytochemicals. These chemical constituents which induces the biological activities. Antibacterial substances like Saponins, Glycosides, Flavenoids, Tannin, and Phenol etc, are found to be distributed in plant leaf extract. Buchananania lanzan (Chironji) is a tree species which belongs to the family Anacardiaceae and is commercially very useful. The fruit of chironji contains a hard nut that on decortication yields kernel containing about 52% oil. The kernel oil is used mostly in the cosmetic manufacturing and as a substitute for olive and almond oil while the whole kernel is used in sweet-meals as a substitute for almond kernel. The major therapeutic values of Chironji oil are carminative, expectorant,

diuretic, aphrodisiac, relaxant, antiseptic, anti-inflammatory and stimulant. The chemical components of this oil are camphene, a-pinene, y-terpinene, b-pinene, myrcene, 8-cineole, sabinene and triglycerides like triolein, dipalmitolein and dioleopalmitin. Chironji seeds are a powerhouse of various nutrients like proteins, fiber, vitamin C, B1 and B2, carbohydrates, amino acid, iron, maleic acid, cardanol, linoleic acid, niacin and calcium.

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