

ETHNOMEDICINAL USES OF *MORINGA OLEIFERA* LAM. BY THE PEOPLE OF BARGARH DISTRICT (ODISHA)

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Abstract: The present paper highlights on the study of a multifarious drug plant *Moringa oleifera* Lam. which is most commonly known as 'Drumstick tree' belongs to family Moringaceae. Nutritionally and medicinally *Moringa* is very rich plant species. All parts of the tree are edible and have long been consumed by humans. It is widely cultivated due to its young pods and leaves used as vegetable. Drumstick tree is multi-utility ethnomedicinal plant used by the tribals and other community people for the treatment of various diseases and ailments.

Keywords: Ethnomedicine, *Moringa oleifera*, People, Bargarh District

INTRODUCTION

Plants have always played an important role in the human life. Since the beginning plants have provided us food and oxygen. As civilization advanced plants fulfilled the demands of the people providing additional necessities such as shelter, clothes, many other tools and more importantly medicines. The herbs are used in traditional system of medicine from the prehistoric time. Now a days their value has increased and has continued to increase as more and more benefits of plants are being discovered and their roles have expanded to satisfy the needs of the modern people.

Study area

The study is restricted to Bargarh district of western Odisha. It is located between 20° 43' to 20° 41' North latitude and 82° 39' to 83° 58' East longitude. The district covers an area of 5837 Sq km. and total forested area is 269.329 Sq km. The soil profile in the district is mixed type. Rainfall in the district is 1435 mm. Temperature reaches 46° C in hot summer and 8° C in cold winter. The forest of Bargarh district mostly comprises of dry deciduous type, however in some places in the different forest zone mixed forests are also observed. There are 13 types of tribal communities residing in the district, out of which *Saharra*, *Binjhal*, *Gond* and *Kondh* are the most populated tribal communities in the district. There is no doubt that the tribals and people of remote areas have used variety of plants for their health problems. But now a day the urban people are also utilizing the herbs in their daily life including primary health care. *Moringa oleifera* is a multifarious drug plant native to India and particularly to North India. It is widely distributed and naturalized species of monogenic family Moringaceae (Nandkarni, 1976, Ramchandran, 1980) with 13 species (Senthikumar *et al.*, 2018). It is an excellent plant and profusely used by the people throughout the country. It is a nutritious vegetable of this tropical and sub-tropical

centre of crop origin grown by Dravidians and later by Aryans (Ramchandran *et al.*, 1980). It is found wild and cultivated though out the plains, especially in hedges and in house yards. It is profusely found near the sandy beds of rivers and streams (The Wealth of India, 1962). It can grow well in humid tropical and hot-dry lands, can survive destitute soils and is little affected by drought (Morton, 1991).

Nutritionally and medicinally *Moringa* is very rich. All parts of the tree are edible and have long been consumed by humans (Farey, 2005). The leaves and fruits are eaten as vegetable by the tribals and people of other communities. The plant is rich in vitamin A and C (Dhar and Gupta, 1982). The drumsticks are especially rich in carotene and converted to vitamin A in the body and it has significant hepatoprotective affect (Greevani and Devi, 1981). Besides it contains a high amount of proteins, vitamin-B6, riboflavin B2 and minerals like iron, magnesium. The leaves and fruits are eaten as vegetable by the tribals and people of other communities also. Leaves are used as vegetable in preparing soup, as salad and for making tea (Steven *et al.*, 2013). Seed oil (Ben oil) is a sweet non-sticking and used for fine machine lubricant and in manufacture of perfume and hair care products (Tsaknis, 1999). Besides, different pharmacological effects were also reported such as anti-microbial, anti-inflammatory, anti-cancer, antifungal, analgesic, anti-ulcer, anthelmintic, antioxidant, and wound healing property (Sultana *et al.*, 2018).

So far the medicinal value of the plant is concern, it is used as a cure for diabetes, high blood pressure, fever, sores and skin infection (Price, 2000, Fahey, 2005), leaves are used for curing fever, malaria, typhoid, ear-infection, common cold and cough, male impotency, skin diseases and infections, lowering and purifying drinking water (Berger *et al.*, 1984). Seeds are also eaten raw and it is considered to be antipyretic, acrid and bitter (Oliveira *et al.*, 1999).

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Botany of *Moringa*

Moringa oleifera Lam. .Gamble, Fl. Madras 1:269 (192). 1918, Haines, Bot. Bihar & Orissa 1: 225 (235). 1922. Steenis in Steenis, Fl. Males, I.4:45.f. 1.1940. Saxena & Brahamam, Fl. Orissa 1: 367. 1994.

Synonyms

The history of *Moringa* dates back to 150 BC. The taxon name of *Moringa* has been derived from the Tamil word “Murunggi” (Senthikumar *et al.*, 2018).

English - *Moringa*, Drumstick tree, Horse radish tree, Ben oil or Benz oil tree

Sanskrit - *Shrigru*, *Shrigrul*, *Krushnashrigru*, *Madhushigru*

Hindi - *Sahijan*, *Munga*, *Sainjan*

Bengali - *Shajina*, *Shajna*, *Sujana*

Odia - *Shajana*, *Shajina Shujana*

Local language - *Munga*, *Mununga*, *Shajna*.

Brief description of the plant

Moringa oleifera is small tree with a height of about 6 to 10 meter, bark gray, smooth, shining. Leaves alternate, pinnately compound, leaflets variable in size, dark green above and pale below. Flowers white, in small pedicle, in axillary panicles. Fruit is long up to 90 cm long, 4-angled, slightly constricted at interval, gradually tapering towards the end. It is a fast growing tree, drought resistant. Flowering and fruiting: through the year

Voucher specimen number – Ramkhol- 256

MATERIALS AND METHODS

An ethnobotanical survey was conducted in different forest localities and villages of Bargarh district during 2016-18. A number of plant species were collected and preserved. The people of different races (such as herbal medicine practitioners, *Kabirajs*, *Vaidyas*, village head experience old men and women) were contacted, discussed and interviewed about ethnomedicinal value of the collected specimens. Out of a number of plant species collected *Moringa* is found to be interesting cultivated plant which is not only nutritionally important but also medicinally very much precious. In order to establish the authenticity of ethnomedicinal uses, the collected data has been cross checked with some scientific literatures (Jain, 1970, Saxena and Dutta, 1975, Sharma *et al.*, 1985-86, Brahman & Saxena, 1990, Kirtikar & Basu, 1991, Jain, 1991, Ambasta *et al.*, 1992, Girach, 1992, Mishra, 1992, Pal and Jain, 1992, Satpathy and Panda, 1992, Sahoo and Mudgal, 1995, Chopra *et al.*, 1996, Joshi, 2006, Behera and Sen, 2008, Sahoo, 2014) and found that the uses were not reported and hence these are new reports (except the asterisk mark) from his locality.

Ethnomedicinal observations

As recorded Drumstick tree is a multi-utility and multifarious drug plant. All parts of the plant are used as medicines. The present paper highlights on

ethnomedicinal uses of different parts of this valuable plant.

Root

Filaria- Root paste is warmed and applied over the affected part.

Ringworm- Root (white variety plant) paste is applied over the affected part.

Earache- Root extract of the plant, honey, *Sesamum indicum* seed oil and rock salt are mixed together and used as ear drops (3 drops) 3-4 times daily.

*Pharyngitis and tonsillitis- Warm root decoction is gargled 2-3 times daily.

Cleaning of throat (Laryngopharyngeal reflux) - Root is chewed in regular interval.

Conjunctivitis- Root extract (4-5 drops) applied as eye drop 2 times daily.

*Kidney stone- Root decoction (4 teaspoon) is taken 3 times daily for 15 days

Diabetes- Root decoction (4 teaspoon) is taken 3 times daily regularly.

Hicca and *Asthma- Root decoction is taken 2-3 times daily.

Leaf

Diarrhoea and Stomach disorder - Leaf extract (1 teaspoon) is taken along with honey (1 teaspoon) and a glass of coconut water 2-3 times daily.

*Asthma- Leaf (10 gm) is boiled in water (200ml) for 5 minutes and filtered. The decoction is mixed with a pinch of salt, fruit powder of *Piper nigrum* (10 numbers) and fruit juice of Citrus lemon (2-3 teaspoon) and is taken once daily in empty stomach.

*Acne- Fresh leaves fine paste is gently warmed and applied over the affected part.

Swelling of scrotum- Leaves are fried in castor seed oil and warm leaf paste is bandaged over the scrotum.

Piles- In case of pain in piles it has been advice to take a sitz-bath in warm leaf decoction.

*Hicough - Leaf decoction (3-4 teaspoon) is taken 3 times daily.

Infantile constipation- Leaf paste is applied over the anus.

*Cut wound- Leaf (10gm) and sugar (1 teaspoon) are crushed together and mixed with seed oil of *Ricinus communis* and is applied over the affected part and bandaged.

*Conjunctivitis- Leaf is crushed and filtered. The filtrate is diluted with water and is applied 2 times daily as eye drop.

Blood purifier - Leaf extract is used as tonic and given to the children as blood purifier and to strengthen their bones.

Smooth delivery- Leaf extract is mixed with milk is taken once daily during pregnancy.

Galactagogue- Leaf extract mix with milk is given to pregnant woman once daily.

Black spot- Fresh leaf extract along lemon juice is applied on the unhealthy skin to remove black spot.

Jaundice- Leaf extract (1 teaspoon) is taken along with honey (1 teaspoon) and coconut water (250 ml) 3 times daily for 15 days.

Tuberculosis- Leaf (10-15gm) is boiled in water (125ml) for 5 minutes and filtered. The filtrate is mixed with a pinch of salt, *Piper longum* fruit powder and lemon juice and is taken 2 times daily for 3-4 months.

*Infant's eye problem- Equal amount of fresh leaves extract and honey is mixed together and applied as eye drop.

*Eye pain- Leaf extract mixed honey is applied on eye as drop 3 times daily.

Constipation- Tender leaves are cooked and taken daily.

Bark

Headache- Bark extract mixed with jaggery is sniffed.

*Spleen enlargement- Bark decoction (100ml), root powder of *Plumbago zeylanica*, rock salt, and fruit powder of *Piper longum* (5gm each) are mixed together and is taken twice daily. Bark decoction is taken along with bark ash of *Butea monosperma* and potash (5gm each) twice daily.

Gingivitis- Bark paste is applied on the affected gum.

Oedema- equal amount of bark of the plant and bark of *Polyalthia longifolia* are crushed together and mixed with fermented cooked rice and applied over the affected part.

*Eczema- Equal amount of bark and iron powder are crushed together and applied over the affected part.

Arthritis – Bark is crushed with cow's urine and the paste is applied on the affected part.

Cleaning of throat (Laryngopharyngeal reflux)- Bark (100gm) and fruit of *Piper nigrum* (10gm) are crushed to powdered and one tenth of the powder is taken in a glass of water once daily in empty stomach.

Children's spleen enlargement and kidney problem- Bark decoction (5 ml) is mixed with rock salt and root powder of *Plumbago zeylanica* (250 mg) and is taken 2 times daily.

Ringworm- Bark crushed with radish (*Raphanus raphanistrum*) and is applied over the affected part.

Hydrocoel- Equal amount of bark powder and seed powder of mustard crushed together and the paste is applied over the affected part.

Erysipelas- Warm bark paste is applied over the affected part.

Blister - Equal amount of bark of the plant, bark of *Ficus racemosa* and *Syzygium cumini* are crushed together in water and applied over the affected part.

Premature ejaculation- Bark powder (120gm) is boiled in 500 ml of water and filtered. The decoction (4 teaspoon) is taken 3 times daily.

Headache- Bark extract and jaggery are mixed together and inhaled 2-3 times daily.

*Anthelmintic- Bark decoction along with fruit powder of *Embelia ribes* and the mixer (1 teaspoon) is taken once daily in empty stomach.

Gout- Bark of the plant and bark of *Crateva magna* are crushed together and applied on the affected area.

Tooth gum pain- Bark and seeds of *Cuminum cyminum* are crushed together and applied on the affected part.

Piles: Sitz-bath is taken in warm bark decoction for at least for 15 minutes twice daily.

Throat pain- Bark paste is applied over the throat.

Waist pain- Warm bark paste is applied on the affected area.

Flower

Eye swelling and redness of eye- fresh flowers are crushed to paste and warmed. It is applied over the eyes.

*Aphrodisiac – Flower (15 gm) are boiled in cow milk (250ml) and taken once daily to enhance sexual vigour power.

Urinary tract inflammation- Fresh flower extract (1 teaspoon) is taken along with coconut water (half a glass) 2 times daily.

Seed

Gout, joint pain and *rheumatoid arthritis – Warm seed oil is massaged on the affected part.

Senselessness- Seed is rubbed on a stone and the paste is applied on the eye.

*Eye inflammation- Seed is rubbed on a stone and the paste along with honey is applied on the iris to cure eye inflammation

Earache- Seed extract (2-3 drops) is poured in to the ear.

Leprotic wound- Seed oil is applied 2 times daily regularly.

Anthelmintic- Seed powder (1-2gm) is taken with water 2 times daily to expel out the intestinal worm.

*Night blindness- Equal amount of seeds of the plant, seeds of *Pongamia pinnata*, and flower of *Myristica fragrans* are crushed together and use as smut in the eyes.

Appetizer- Seed powder (1-3gm) is taken once daily in empty stomach.

Menorrhagia – Seed powder (1-3 g) is taken 2 times daily.

Stomach pain- Seed powder (1-3 g) is taken 2 times daily to cure stomach pain during menstrual cycle.

Gum

Whitlow - Fresh gum paste is applied over the affected part.

*Carries of teeth- Gum of the plant is chewed.

Headache- Gum is crushed with cow milk and is applied on forehead.

Boil- Gum is rubbed on a stone with cow milk and is applied over the affected part.

RESULTS AND DISCUSSION

From the above ethnomedicinal data it has been observed that the plant parts of *Moringa* such as root, bark, leaf, flower, seed and gum are used variously to cure several diseases like diarrhoea, stomach disorder, carries of tooth, headache, appetizer,

menorrhagia, stomach pain, filaria, ringworm, earache, gingivitis, pharyngitis, tonsillitis, cleaning of throat, conjunctivitis, kidney stone, diabetes, hicca, asthma, swelling of scrotum, piles, hiccup, Infantile constipation, cut wound, blood purifier, smooth delivery, galactagogue, black spot, jaundice, tuberculosis, infant's eye problem, eye pain, constipation, Oedema, eczema, acne, blister, erysipelas, boil, whitlow, arthritis, spleen enlargement, kidney problem, hydrocoel, anthelmintic, premature ejaculation, tooth gum pain, throat pain, waist pain, eye swelling, redness of eye,

aphrodisiac, urinary tract inflammation, senselessness, rheumatoid arthritis, gout, joint pain, eye inflammation, earache, leprotic wound and night blindness.

The paper highlights on the 72 prescriptions, out of which bark is used in maximum (22) numbers followed by leaf (19 numbers), seed (12 numbers), root (11 numbers) and flower and gum (4 each) (Fig.1). Besides, it has been observed that the plant parts are used externally in maximum (32) numbers followed by oral application (29 numbers) and internal application (11 numbers) (Fig.2).

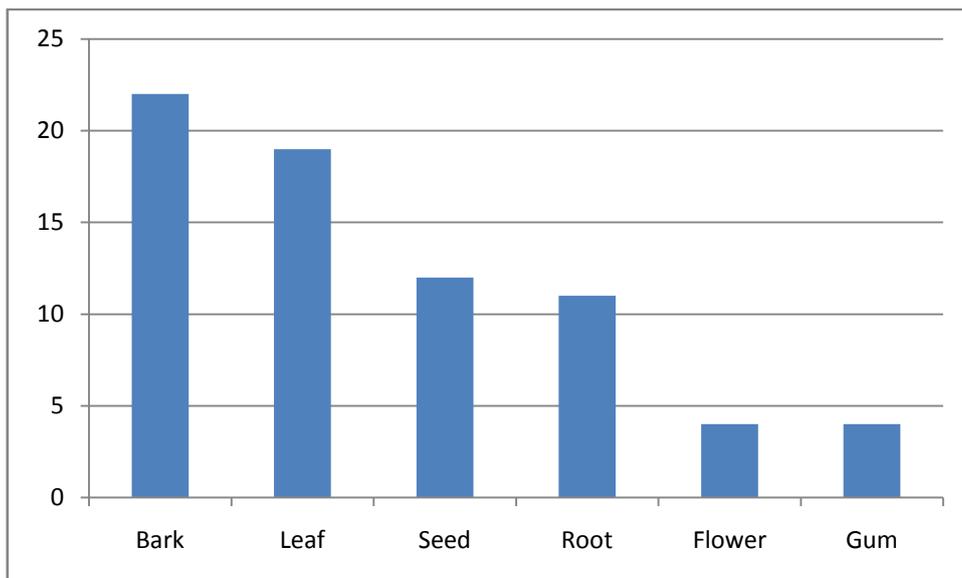


Fig 1. List of plant parts of Moringa used against various diseases

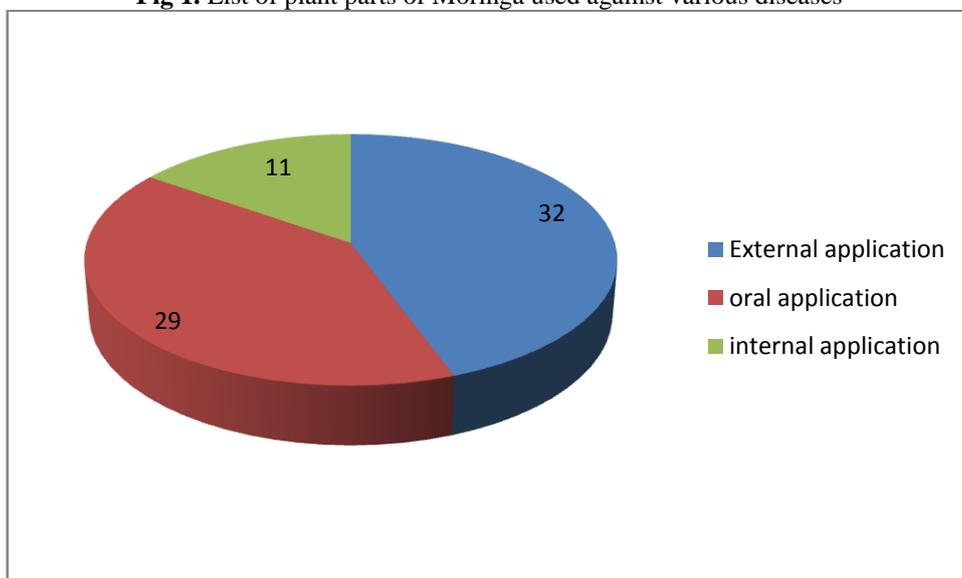


Fig 2. Mode of applications used against various diseases

CONCLUSION

It is evident from the above study that *Moringa oleifera* is not only nutritionally valuable but also is an important medicinal plant. It is cultivated due to its young pods and leaves uses as vegetable, nutritional value and herbal medicine. It has also

been observed that the people of the locality use it profusely and they have much faith and belief on the efficacy of the plant. It is a drought resistant plant and does not need much care to grow. The plant can be grown easily through vegetative propagation and seed germination. The plant parts like leaves, flowers and pods are plugged not only for domestic purposes

but also for commercial purposes. That is why the plant has already lost its habitat from the wild and it has survived only due to domestication.

Hence it is suggested that the plant should be grown in large scale by the ayurvedic and pharmaceutical companies to fulfil their requirements. It is also a very useful plant for those scientists who are working on its pharmacological and pharmacognostical study. The ethnomedicinal uses reported here are the baseline study to start the research works related to pharmacology, pharmacognosy and biochemical,

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