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On the use of Moringa oleifera as a medicinal plant in India and the Philippines

SIXL-DANIELL, KARIN, PROF. SIXL, W., SIXL, GUDRIT, FUCHS, W.

European-Asian Research and Advisory Center, 34 Draycott Drive #03-03, Singapore 259426., Geomedizinische Forschungsstelle, Attemsgasse 11, A-8010 Graz, Austria.

Summary: Moringa oleifera (Moringaceae) is one of more than a dozen species belonging to the Moringa family and can be found all over the globe. The fact that this tree is widely used is also reflected in the appearance of it in a number of languages. The benefits of Moringa oleifera are plentiful: Practically every part of the tree is beneficial in some way. The use of various parts of the Moringa tree is widespread all over the globe and the multipurpose nature of the tree can be seen in the wide range of uses of its parts for food, fodder and medicinal use. Moringa oleifera leaves are an excellent source of vitamins (especially Vitamin A, B and C), minerals (calcium, iron) and protein. They are used inter alia to combat malnutrition, blindness, diabetes, high blood pressure, anemia, urinary tract problems, kidney stones, to induce lactation in nursing women, and as an antiseptic. The seeds are used e.g. against joint pains and for water purification purposes. The bark is used for example to treat rheumatism, diarrhea, as well as cough and gum diseases. The flowers are rich in potassium and calcium and are used to cure inflammations. The multipurpose nature of the plant makes it understandable that it is often referred to as a “wonder-tree”.

Keywords: Moringa olifera, medicinal plant, India, Philippines, Malunggay, Murungakka
Introduction

Moringa oleifera (Moringaceae) is one of more than a dozen species belonging to the Moringa family and can be found in India, Arabia, Africa (e.g. Togo, Benin, Senegal, Kenya, Tanzania, Malawi, Niger), America (e.g. Nicaragua, Mexico), as well as Sri Lanka, Malaysia and the Philippines. The tree is often referred to as a “wonder-tree” for its multipurpose usability and also known as “Drumstick-tree”, “Horseradish-tree” and “Ben-oil tree”.

The fact that this tree is widely used is also reflected in the appearance of it in various languages, such as for example in the Indian context Hindi (surajana), Tamil (murungakka), Malayalam (muring tree and muringakkai), Bengali (sojne danta), Nepali (sajiwan), in the Filipino context in Tagalog (malunggay) and Ilocano (marunggay), as well as in Nicaragua (marango), Haiti (benzolive), Bahasa Indonesia (kelor and limaran in Javanese) or Chinese (la mu in Mandarin, lat mok in Cantonese). In Africa, the tree is known as “mother’s best friend.” Moringa oleifera is a relatively fast growing tree which can grow more than 10 metres high and is topped by a crown in the shape of an umbrella. The leaves are small (1-2 cm) and can be found at markets. The species is characterized by its long, drumstick shaped pods that contain its seeds. The pods are green and tender at first and then turn dark and solid. The benefits of Moringa oleifera are plentiful: Practically every part of the tree is beneficial in some way. The bark is whitish and corky, the leaves are small and spicy, as are the roots which were used as a substitute for horseradish by Europeans in India (hence the name horseradish tree).
The study

The authors conducted research in India (Kerala and Tamil Nadu) as well as the Philippines and Singapore. Moringa is used as e.g. food, fodder and for medicinal purposes. Moringa is an important food source in many countries. As mentioned above, practically every part of the tree is beneficial in some way.

The seeds are eaten similar to peanuts on the Malayan Peninsula. The leaves are eaten as soup, greens, sauces, salads, curries, pickles as well as seasoning. Pressing the seeds gives edible oil which is clear, sweet, does not become rancid and is used for manufacturing perfumes and hairdressings. A dual usage of Moringa, as a source of oil and flocculent, is possible, since the seed cake remaining after oil extraction retains the flocculating properties. Studies have shown that Moringa oleifera leaves are an excellent source of vitamins (especially Vitamin A, B and C), minerals (calcium, iron) and protein. Many programs use Moringa leaves to fight against malnutrition and its associated diseases (blindness etc.).

Because of its beneficial effects, dry Moringa leaf powder has been used in the supplementary feeding program of the Integrated Child Development Scheme in India. The leaves are similar to spinach and are often offered together with such vegetables at markets, praised there for being “good for the eyes”, “very healthy for the whole body” etc.

Research shows that the above mentioned practice of using the roots as a substitute for horseradish would not be recommended nowadays as the root has been shown to contain 0.105% alkaloids, especially moriginine, and a bactericide, spirochin, both of which can prove fatal following ingestion.
The flowers, which have to be cooked, are consumed either mixed with other foods or fried in butter and have been shown to be rich in potassium and calcium. Moringa is also used as animal food: leaves and young branches are eaten by animals, especially goats. The plant is also commonly planted in e.g. the Philippines as a living fence.

**Medicinal Use**

Examples for the use of Moringa for medicinal purposes are abundant: For example, the juice of the leaves is believed to stabilize blood pressure, the flowers are used to cure inflammations, the pods are used for joint pain, the roots are used to treat rheumatism, and the bark can be chewed as a digestive. In both areas in India studied by the authors (Kerala and Tamil Nadu), the bark of the roots are used to treat “painful and difficult urination” as well as kidney stones. The leaves are “rich food in vitamins A, C and D” and, as well as the flowers, are eaten cooked as food. They are also used for medicinal purposes such as against headaches, “sore eye and wounds” for which “leaf-paste” is applied. Expressed juice of ripe leaves is used to treat high blood pressure (one teaspoon per day). The bark is used to treat rheumatism, diarrhea, as well as cough and gum diseases. Common uses include the expressing of bark juice and preparing it with eggs to something similar to scrambled eggs against coughs. Further uses include the treatment of anemia, colds, fevers, flues, cataract issues as well as night blindness, edemas, tuberculosis as well as calcium deficiencies. In the Philippines, the use of Moringa includes inter alia the seeds being boiled like beans and used for treatment of diabetes. The leaves are used for their antiseptic characteristics. The bark is mixed with coconut oil applied to inside of the bark and wrapped
around fractures to treat them. Women are given Moringa postpartum as the boiled leaves are used to induce lactation as well as to prevent anemia.

Purdue University mentions that “according to Hartwell (1967–1971), the flowers, leaves, and roots are used in folk remedies for tumors, the seeds for abdominal tumors. The root decoction is used in some countries for dropsy. Root juice is applied externally as rubefacient or counter-irritant. Leaves applied as poultice to sores, rubbed on the temples for headaches, and said to have purgative properties. Bark, leaves and roots are acrid and pungent, and are taken to promote digestion. Oil is somewhat dangerous if taken internally, but is applied externally for skin diseases. Bark regarded as antiscorbutic, and exudes a reddish gum with properties of tragacanth; sometimes used for diarrhea. Roots are bitter, act as a tonic to the body and lungs, and are emmenagogue, expectorant, mild diuretic and stimulant in paralytic afflications, epilepsy and hysteria.”

**Water Purification**

*Moringa* seeds can furthermore be used for water purification purposes, as indicated to the authors during their studies in India. No such use was reported from the Philippines (Batangas, Pangasinan).

The reason for the usability of the seeds for water purification purposes is that they “contain a cationic polyelectrolyte that has proved efficient in water treatment, as a substitute to aluminium sulphate and other flocculent. There is a dual advantage to this property as it can be used as a locally-produced substitute for imported flocculent, thus reducing expenditure of foreign currency reserves by third world countries and *Moringa* flocculent, unlike aluminium sulphate, is completely biodegradable. This aspect may be particularly interesting to developed countries.”(1).

The processing of the seed is simple. The mature “drumsticks” are dried with the kernel being crushed into powder. This is followed by adding the powder to some water and this mixture being shaken for a few minutes, followed by straining this mixture into a larger container of water. This water mixture is then stirred vigorously for two minutes, followed by a period of more slowly stirring for ten to fifteen minutes. Afterwards, the water needs to “sit undisturbed for at least an hour so the solids attached to the powder particles can settle to the bottom. Because bacteria is attached to solids, this process removes particles and bacteria as well. It is recommended that boiling or further water treatment be done to finalize the purification process.”

Water purification with Moringa has been tested by the authors and has shown a decrease in germ count from e.g. $10^3$/ml to $<10^3$/ml within one hour.
The potential toxicity of the seeds has been considered in two major studies. The conclusions of both were that the doses typically used for water treatment posed no serious threat to human health.

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**IRODALOM**

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6. http://www.le.ac.uk/engineering/staff/Sutherland/moringa/water/water.htm
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A Moringa oleifera gyógynövényként való alkalmazása Indiában és a Fülöp szigeteken


Kulcsszavak: Moringa oleifera, gyógynövény, India, Fülöp-szigetek, Malunggay, Murungakka