

REVIEW ON “MIRACLE TREE”– MORINGA OLEIFERA

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ABSTRACT

Moringa Oleifera is a kind of woody tree traditionally used as nutritional source and as a medicinal plant. It grows wild in the tropical and subtropical areas of Asia, Africa and the Middle East. As a nutritional and medicinal plant, Moringa oleifera is a rich source of bioactive compounds with diverse pharmacological activities. It has been widely used in the treatment of certain diseases as a traditional medicinal herb. The leaves are rich in minerals, vitamins and other essential phytochemicals. Extracts from the leaves are used to treat malnutrition, augment breast milk in lactating mothers. It is used as potential antioxidant, anticancer, anti-inflammatory, antidiabetic and antimicrobial agent. M. insights on the use of moringa as a cure for diabetes and cancer and fortification of moringa in commercial products. This review explores the use of moringa across disciplines for its medicinal value and deals with cultivation, nutrition, commercial and prominent pharmacological properties of this “Miracle Tree”.

INTRODUCTION

Moringa oleifera seed, a natural coagulant is extensively used in water treatment. The scientific effort of this research provides discovery of novel antimicrobial agents is very important for the control of pathogenic microbes, especially for the treatment of infections caused by resistant microbes. Medicinal herbs with antimicrobial activities are considered a potent source of novel antimicrobial function. Moringa oleifera is a

woody tree mainly distributed in the Tropical and subtropical regions of Asia, Africa and the Middle East.^[1]

In China, Moringa oleifera was planted at a large scale in Yunnan, Guangxi and Guangzhou provinces about twenty years ago. It is widely used as a vegetable, functional food and medicinal plant that has rich nutritional composition with diverse pharmacological activities.^[2-4]



Synonyms

Moringa,
Drumstick tree,

Horseradish tree,
Ben oil tree,
Malunggay.

Biological source

It can consists of dried long, slender, triangular, seed pods of plant

Moringa Oleifera.

Family: Moringaceae.

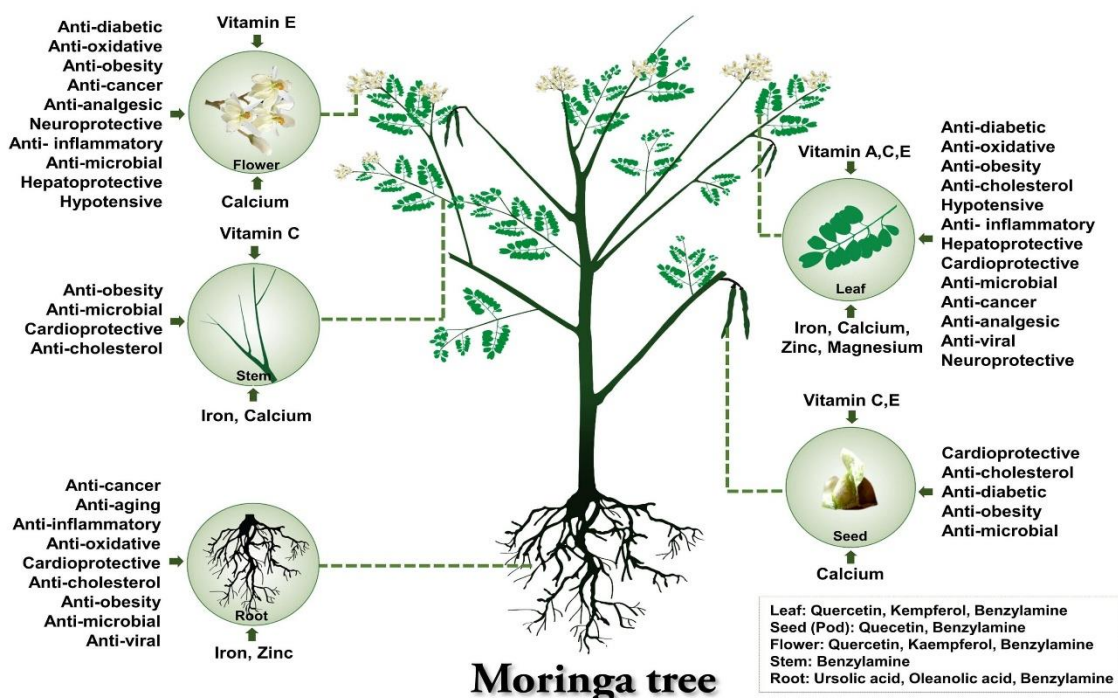
Morphological characteristic

M. oleifera is a fast-growing, deciduous tree that can reach a height of 10–12 m and trunk diameter of 45 cm. The bark has a whitish-gray color and is surrounded by thick cork. Young shoots have purplish or greenish-white, hairy bark. The tree has an open crown of

drooping, fragile branches, and the leaves build up a feathery foliage of tripinnate leaves.

The flowers are fragrant and hermaphroditic, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1–1.5 cm long and 2 cm broad. They grow on slender, hairy stalks in spreading or drooping flower clusters, which have a length of 10–25 cm.

The fruit is a hanging, three-sided, brown and 20–45 cm capsule, which holds dark brown, globular seeds with a diameter around 1 cm. The seeds have three whitish, papery wings and are dispersed by wind and water.^[5-6]

**Biological Classification**

Kingdom: Plantae
 Phylum: Tracheophyta
 Class: Magnoliopsida
 Order: Brassicales
 Family: Moringaceae
 Genus: Moringa
 Species: *M. oleifera*

Geographical Source

Moringa oleifera, is native to the foothills of the Himalayas in North Western India and also in South West India. Drumstick became a popular vegetable in South Indian states. The crop is widely distributed in India, Sri Lanka, Pakistan, Singapore, Malaysia, Cuba, Jamaica and Egypt.

PHARMACOLOGY**Anti-inflammatory Properties of Moringa**

In vitro and in vivo studies with the plant have recommended its effectiveness in treating inflammation,

hyperlipidemia and hyperglycemia. The properties of phytochemicals such as flavonols and phenolic acids related to the anti inflammatory activities.^[7]

The Moringa also possed anti inflammatory properties against CC14 induced liver damage and fibrosis. This finding was confirmed by the decrease of globulin level in serum and the myeloperoxidase activity in liver.^[8]

Anti-microbial Properties of Moringa

The antimicrobial activity of aqueous extract of pods husks against Gram positive, Gram negative pathogenic bacteria and yeast strains.^[9]

The aqueous and ethanolic Moringa leaf extracts indicated promising potential as a treatment for certain bacterial infections. The antibacterial activity of the Moringa extract was observed to be greater against Gram-positive species (*S.aures* and *E. faecalis*) than against gram positive species (*E. coli*, *Salmonella*, *P. aeruginosa*, *V. parahaemolyticus* and *A. caviar*).^[10]

Anti-hyperglycemia Properties of Moringa

Moringa oleifera is well known for its pharmacological actions and is used for the traditional treatment of diabetes mellitus.^[11]

The hypoglycemic activity of Moringa oleifera, with significant blood glucose lowering activities has been confirmed. Methanol extracts of its dried fruit powder has produced N-Benzyl thiocarbamates, N-benzyl carbamates, benzyl nitriles and a benzyl; which prove to trigger insulin release significantly from the rodent pancreatic beta cells, and have cyclooxygenase enzyme and lipid peroxidation inhibitory activities.^[12]

Anti-cancer Properties of Moringa

Moringa oleifera Lam pod could be a Potential chemopreventive agent. The dose dependent administration of boiled Moringa oleifera (bMO) caused the incidence and multiplicity of tumours to decrease especially at the highest dose (6.0%) of bMO. It was further reported that when compared to the lower bMO doses, the number of adenocarcinomas reduced in correspondence to the number of superficial adenocarcinomas.^[13]

Anti-tumor Properties of Moringa

A study to isolate several bioactive compounds from the Philippine grown Moringa oleifera Lam. reported the effect of several isolates as anti-tumour promoters. The function of mainly one of these bioactive compounds, Niazimicin, as an inhibitor against the two-stage mouse tumorigenesis. The results from in vitro screening suggested that several of the test compounds, particularly 4-(alpha-L rhamnosyloxy) benzyl isothiocyanate, niazinmicin and beta-sitosterol-3-O-beta-D-glucopyrinoside were strong anti-tumour promoters.^[14]

Anti-fibrotic Properties of Moringa

It was recently discovered that the Moringa oleifera seed extract exhibited anti-fibrotic activity on liver fibrosis in rats. It showed significant properties against CC14 induced liver fibrosis in rat which was confirmed by histological finding as well as biochemical analysis of a marker of collagen disposition in liver known as hydroxypoline.^[8]

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