



A Review on pharmacological activity on moringa oleifera

Author name :-

Tupe Mayur Ravindra

Thokal Vaishnavi R.

Tambe pratiksha S.

Department of pharmacognosy, HSBPVT, Group Of Institutions, College of Pharmacy, Kashti ,Shrigonda,
Maharashtra, India. 414701.

Principal: prof. Sunil Nirmal sir

Abstract :-

Moringa Oleifera or Drumstick tree is a plant of family Moringaceae that is widely cultivated in India. It is known as Drumstick tree. It is rich in Vitamins A and C. It is also rich in Minerals (Ca,P,K,Fe,Cu,S,Mg) and has many medicinal properties. Most of the biological activity of this plant is due to the presence of large number of flavonoid, glycoside, and glucosine. For the past 20 years, there have been several reports published which describe the nutritional and medicinal characteristics of the plant. The plant is well known for its valuable pharmacological properties such as:

Anti-microbial

Antioxidant

Anti-inflammatory

And many more. This review aims at providing all the essential pharmacognosystic, phytochemical and pharmacological information.

Keywords:-

Moringa oleifera, traditional medicinal uses, pharmacological activity, phytochemistry, phytopharmaceutical formulation, toxicity

Introduction:-

The "miracle tree," *Moringa oleifera* (*M. oleifera*), is said to have originated in Afghanistan, Bangladesh, India, and Pakistan, although it now grows in practically all tropical and subtropical parts of the world [1]. There are thirteen species in the *Moringa* family: *M. oleifera*, *M. arborea*, *M. rivae*, *M. ruspoliana*, *M. drouhardii*, *M. hildebrandtii*, *M. concanensis*, *M. borziana*, *M. longituba*, *M. pygmaea*, *M. ovalifolia*, *M. peregrina*, and *M. stenopetala*. Of these, *M. oleifera* has gained notoriety for its applications as a fertilizer, biogas producer, and other uses [2, 3]. One special quality of moringa is its ability to withstand drought [3]. *M. oleifera* is one of the most affordable and dependable substitutes for a healthy diet, according to studies [4]. The necessary nutrients found in nearly every section of the tree are utilized. Leaves of *M. oleifera* have a high





The perennial tree *Moringa oleifera* L., which belongs to the Moringaceae family, is widely grown in many tropical countries and can withstand difficult growing environments. *M. oleifera*, sometimes referred to as the miracle tree, has been used in traditional medicine for generations. Different portions of *M. oleifera* are used to treat a variety of illnesses, including malnutrition, diabetes, blindness, anemia, hypertension, stress, depression, skin, arthritis, joints, and kidney stone issues, with no documented adverse effects at doses that can be consumed. Additionally, this plant shown the ability to support blood glucose regulation, cardiovascular system health, and the provision of antioxidant, anti-inflammatory, and anti-cancer properties.

Pharmacological activity :-**Antibacterial and antifungal activity:-**

This study looked at the anti-bacterial and anti-fungal effects of *M. oleifera* steam distillate. It showed a big decrease in the growth of bacteria tested, with *E. coli* being the most inhibited. Other bacteria that were more inhibited were *S. Aureus*, *K. Pneumoniae*, *P. Aeruginosa*, and *B. Subilis*. Fungi were also inhibited, with a smaller colony diameter in plates that were poisoned with the distillate compared to those without it. *A. Niger* was the most inhibited, followed by *A. Oryzae* and *A. Terreus*, and *A. Nidulans*. It's possible that the essential oil content of the distillate could be what's causing the antimicrobial and anti-foaming effects.

Antioxidants effect :-

Phytochemical analysis of the hydro-ethanolic extract revealed the presence of phenolic chemicals, which may be the cause of *Moringa's* antioxidant function. In this regard, glucosinolates, isothiocyanates, thiocarbamates, and flavonoids are among the significant bioactive substances found in moringa pods 16. These substances replenish antioxidants confined to membranes, quench reactive oxygen species, and chelate metal ions (11).

The main component found in the drumsticks of plant 16 is β -carotene, and the presence of vitamins A and C in *M. oleifera* illuminates their method of action in inducing antioxidant profiles in the current investigation. The synergistic action of the extract's ingredients and the stimulation of Phase-II enzymes (GSTs) may be responsible for the biochemical basis of *M. oleifera* extract's chemopreventive activity.

Anti inflammatory activity :-

Using the lipopolysaccharide (LPS)-induced murine macrophage RAW 264.7 cell line, the anti-inflammatory activity of the isolated compounds was examined. With an IC(50) value of 1.67 microM, 4-[(2'-O-acetyl-alpha-l-rhamnosyloxy)benzyl] isothiocyanate (1) was shown to have strong NO-inhibitory activity. 2 (IC(50)=2.66 microM, 4 (IC(50)=2.71 microM), and 5 (IC(50)=14.4 microM) were the next most active compounds. The NO-inhibitory activity of *M. oleifera* fruits 29 has been attributed to these isolated components 1, 2, 4, and 5. (Cheenpracha et al., 2010). Additionally, *M. oleifera* might have some advantageous qualities that work against the immune-mediated inflammatory responses that are chemically triggered and typical of rat asthma.

Analgesic activity:

The Hotplate and Tail immersion methods were used to assess the analgesic activity of *M. oleifera's* alcoholic extract and its different fractions, such as Petroleum ether, Ethyl acetate, Diethyl ether, and n-Butanol. The alcoholic extract of *M. oleifera* seeds, along with its other fractions, demonstrated strong analgesic effect that is equivalent to aspirin at a dosage of 25 mg/kg of body weight. The results of this investigation indicate that *M. oleifera* Lam. seeds have a noticeable analgesic effect and are equipotent to a common medication (aspirin), establishing their usage as a regular painkiller. 5. The methanol extract of *M. oleifera* was tested on guinea pigs and frogs to determine its local anesthetic activity.

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Serial no.	Name of compounds	Chemical structure
1	1,2,3-Cyclopentanetriol	
2	L-galactose, 6-deoxy	
3	n-Hexadecanoic acid	
4	Tetradecanoic acid	
5	cis-Vaccenic acid	
6	Octadecanoic acid	
7	beta-1-Rhamnofuranoside,5-O-acetyl-thio-octyl-	
8	Vitamin E	
9	gamma-Sitosterol	
10	Pregn-5,7-diene-3-ol-20-one	
11	Squalene	
12	2,6-Dihydroxybenzoic acid	
13	Bis(2-ethylhexyl) phthalate	
14	Ethyl oleate	
15	Quinic acid	
16	Hexadecanal	
17	L-(+) Ascorbic acid-2,6-dihexadecanoate	
18	Oleic acid	
19	Phytol	
20	Beta-carotene	

Conclusion :-

Moringa oleifera, an important medicinal plant, is one of the most widely cultivated Moringaceae species. Leaves, barks, roots, stems, buds, flowers, and other plant parts have been used to treat a variety of human ailments. Anti-bacterial, antifungal, anti-inflammatory and analgesic, antioxidant, hypotensive, anti-ulcer, anaesthetic cardioprotective, antiurolithiatic activity, wound healing activity, and other pharmacological effects have been reported. This review only summarizes some of Moringa oleifera's pharmacological activities, which can be investigated further to isolate active compounds for novel herbal medicine.

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