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A Review On-Medicinal Uses of Moringa Oleifera plant

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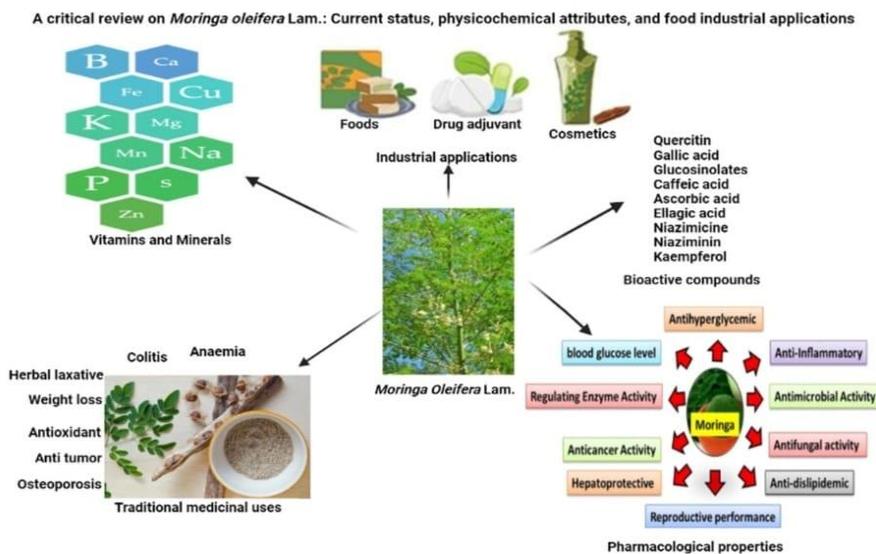
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Abstract

Moringa Oleifera Lam. (*M. Oleifera*) also known as drumstick or horseradish is a perennial tree that belongs to the Moringaceae family. Consider to be a medicine food homology plant with great medicinal value and was introduced into Yunnan province, china in the 1960. This topic for review article is excellent, considering its increasing popularity and potential health benefit. Important of traditional medicine and phytotherapy. Overview of traditional uses in various cultures (Ayurveda, Unani, African). Medicinal and non-medicinal benefit.

Moringa Oleifera is a multi-purpose herbal plant used as human food and on alternative for medicinal purpose. Hence, this study investigated the influence of African mistletoe on the antioxidant, antidiabetic and neuroprotective activities or infested moringa leaf in sucrose induced diabetes in *Drosophila melangaster* model Moringa is tropical plant with high nutritional and medicinal value.

Graphical Abstract-



Moringa Oleifera includes active components such as flavonoids, tannins, saponins, phenolics and triterpenoids which have antibacterial properties and can be utilized as a safe and inexpensive plant antimicrobial [12, 26].

Anti-inflammatory

Moringa has been used to treat a wide range of acute and chronic conditions, In vitro and vivo research using the plant have advocated its effectiveness in treating inflammation, hyperlipidemia and hyperglycemia [10][21][19]. Many other bioactive substances found in *Moringa Oleifera* such as flavonoids and phenolic acids, may play a role in the plant's anti-inflammatory effects. Herbal therapy is increasingly being used as an alternative to conventional medicine in wealthy countries. *Moringa* leaves have been demonstrated to have anti-inflammatory properties. *Moringa* leaves include flavonoids and tannins.

Inflammation is the body's defensive response to stimuli and has been related to metabolic syndrome, cardiovascular disease, and cancer. *Moringa Oleifera* seed extracts have been shown to reduce the production of NO, TNF- α and IL-1 β in LPS-stimulated mouse macrophages. Which are indicators of inflammation. [4]



Fig: Anti-inflammatory [32]

Anti-oxidant

The 90% (90:10 ethanol: water) ethanol-ethanol gradient extract, which is the optimal gradient solvent for *Moringa Oleifera* leaves was shown to have the highest antioxidant activity in the leaves. It was found that the volatile oil obtained by distilling the dried *Moringa Oleifera* leaves exhibited antioxidant effects [4]. The compound in *Moringa* in addition to their important medicinal properties and function as effective antioxidants and inhibitors of bacterial and fungal growth. *Moringa* is rich in phenolic compounds that have been found to considerably inhibit oxidation in food [16,17].

Antidiarrheal

Tannins, saponins and flavonoids are one of three types of phytochemicals having antidiarrheal properties.

Analgesic and antipyretic

The antipyretic action of ethanol and the ethyl acetic acid in seeds was quite powerful [21] both the leaves and the pods are consumed as antipyretics in Thailand [4].

Cardiovascular disease

When rats were administered 100 mg/kg between of *Moringa* leaf extract daily, their cholesterol levels reduced by 50% and internal carotid atherosclerotic plaque development decreased by 86.52% compared to the control group. In hypertensive rats, *Moringa* seed consumption was found to have antioxidant and anti-inflammatory activities by lowering vascular oxidative stresses in the aorta ^[8].

Anthelmintic Activity

Anthelmintic activity it has been shown that *Moringa Oleifera* leaves had better dose-dependent anthelmintic action than *Vitex Negundo* leaves. The *Moringa Oleifera* anthelmintic activity was proven in an in-vitro study in which the leaf extracts hindered egg embryonation, egg hatching, and caused mortality in both L1 and L2 larvae of *haemonchus contortus*. The biologically active components, however failed to state that these studies may be used to develop natural pharmaceuticals based on this feature for toxicity and associated pharmacokinetic testing ^[4].

Hepatoprotective activity

All of the flavonoids contained in *Moringa*, including kaempferol, iso-quercetin, rhamnetic and others quercetin in the plants flowers is thought to be responsible for the hepatoprotective qualities. Furthermore, a decrease in seraminotransferase function and globulin levels suggested that the seeds were effective in treating carbon tetrachloride induced liver fibrosis ^[2] In animal models, *Moringa Oleifera* extracts protect the liver from chemical toxicity; numerous bioactive components and mechanisms have been studied ^[4] The *Moringa Oleifera* leaf extract has been shown to protect against liver damage by lowering LPO and elevating GSH as well are reducing tissue histopathology, aspartate aminotransferase (AST), alkaline phosphatase (ALP), and the enzyme alanine aminotransferase ^[8]

Anti-Allergic activity

Allergic reaction cases are growing year after year. The reaction range from a rash to anaphylactic shock. Which can be fatal. Subsequent allergen exposure causes mast cell degranulation, which releases mediators that cause allergic symptoms. The early phase of an allergic reaction usually occurs minutes after sensitization, causing the rease of histamine. Which induces bronchoconstriction, vasodilation, and vascular permeability ^[1]

Pharmacological activity of different parts of *Moringa Oleifera*-

Plant part	Pharmacological Activity
1. Leaves	<ul style="list-style-type: none"> - Antiatherosclerotic - Antiinflammatory - Anticancer - Antimicrobial - Antioxidant - Hepatoprotective - Hypocholesterolemic - Hypoglycaemic - Hypolipidaemic - Immunomodulatory - Nephroprotective Neuroprotective

2.Roots	<ul style="list-style-type: none"> - Anti-inflammatory - Anti-microbial - Hepatoprotective - Nephroprotective
3.Flower	<ul style="list-style-type: none"> - Antimicrobial - Hepatoprotective - Nephroprotective
4.Pods	<ul style="list-style-type: none"> - Anticancer - Anti-inflammatory - Atimicrobial - Antioxidant - Hypocholesteromic
5. Seeds	<ul style="list-style-type: none"> - Anti-inflammatory - Anti-cancer - Antimicrobial - Antioxidant - Antitumor - Immunomodulatory

Some reported work of Moringa Oleifera

S.N	Author	Objective Study	Application	Ref
1	Buakaew et al 2021	<i>Moringa Oleifera</i> and <i>Azadirachta indica</i> were assessed for oral healthcare and gingivitis adjunctive treatment	Author state that accumulative reduction percentages of both <i>Staphylococcus</i> spp. And <i>Candida</i> spp. Were found and indicated that the herbal mouthwashes reduced gingival index and plaque index and showed potential as oral healthcare products.	27
2	Nawal Aidaros et al 2021	To investigate and compare the effect of green tea, black tea and <i>Moringa Oleifera</i> on artificially.	In dentin, the highest mean value was found in <i>Moringa oleifera</i> . Study concluded that <i>Moringa</i> tree enhanced the remineralization process and thus, might to be considered as an.	16

3	Anas Ret al 2021	To study the effectiveness of paste Based <i>Moringa Oleifera</i> to increase calcium levels Human Tooth.	Results of this research showed that <i>Moringa Oleifera</i> paste has higher calcium level compared to pre-test groups and <i>Moringa Oleifera</i> paste can be effective in increasing calcium levels of human teeth.	8
4	Younis SH 2020	To assess the effect of leaves extract of <i>Moringa Oleifera</i> loaded-varnish groups IV & V on enamel.	<i>Moringa</i> leaf extract loaded-varnish groups had significantly higher Ca, P, and O deposition than the fluoride varnish group. Leaves extract of <i>Moringa Oleifera</i> might be considered as a biomimetic material which having capacity to guiding enamel tissue remineralization	11
5	Mahassen M Farghaly et al 2020	To formulate a nontoxic mouthwash from <i>Moringa Oleifera</i> .	<i>Moringa</i> extract showing antibacterial and antiplaque effect will be used.	28
6	Piasti sooandani et al 2020	To assess the antibacterial effect of <i>M.Oleifera</i> extract as an irrigation solution against E. faecalis.	<i>M.Oleifera</i> extract solution at concentrations of 755 and 100% is as effective as 5.25% NaOCL against E. faecalis	3
7	Su-Kyung Jwa et 2019	To investigate the antimicrobial effects of the <i>M.Oleifera</i> leaf extracts.	Extracts showed antimicrobial activity against S. mutans and inhibited formation of carogenic biofilm	29
8	Carranza J B, 2017	To identify the secondary compounds of three varieties of <i>Moringa Oleifera</i> Lam. Extracts namely;Native, Chinese, and yard long malinggay using phytochemical analysis.	The extracts of <i>Moringa</i> varieties contain flavonoids, alkanoids and tannins that are known to have antimicrobial and anti-inflammatory properties; thus, these have potential natural components in the manufacture of toothpastes	19
9	Hanaa Elgamily et al 2016	To assess the antibacterial and antifungal potentials of different parts of <i>Moringa Oleifera</i> .	For dental remedies, experimental toothpaste exhibited higher mean inhibition than the mouthwash against <i>Staphylococcus aureus</i> , <i>Streptococcus mutans</i> and only the toothpaste revealed antifungal effect against <i>Candida albicans</i>	14
10	Rao P K, et al 2011	To assess the antibacterial activity of isolated compounds from <i>M. Oleifera</i> against selected oral bacteria	All the isolated compounds from <i>M.Oleifera</i> were active against <i>Streptococcus mutans</i> (MTCC 497), <i>Streptococcus salivarius</i> , <i>Lactobacillus</i>	7

			fermentum, Streptococcus anginosus, Streptococcus gordonii, Lactobacillus acidophilus	
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Conclusion

Moringa Oleifera includes active components such as flavonoids, tannins, saponins, alkanoids, phenolics, and triterpenoids. Which have antibacterial properties and can be utilized as a safe and inexpensive plant antimicrobial. *Moringa Oleifera* leaf extract contains of high concentration of minerals and proteins. Traditional medicine has the potential to care a variety of oral soft tissue illness. The move research on *Moringa Oleifera* is required to utilize its pharmacological application for the management and prevention of oral disease.

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