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HYDROALCOHOLIC EXTRACTION OF *MANGIFERA INDICA* (LEAVES) BY SOXHLETION

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ABSTRACT

Keywords:

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The genus *Mangifera indica* belongs to the family Anacardiaceae and comprises of 40 species distributed in tropical and sub-tropical parts of South East Asia, Africa and Latin America. The resin is useful in cutaneous disease. The juice of kernel is snuffed to stop nasal bleeding. A decoction of the leaves with a little honey added is given in aphonia, the loss of voice. Mid ribs of the leaves calcined are used to remove warts on eyelids. Tender leaves, dried and made into a powder, are useful in diabetics. Smoke of the leaves is said to have a curative effect in some infections of throat diseases. Ashes of leaves are a popular remedy for burns and scalds. Dried flowers in decoction powder and useful in diarrhea, chronic dysentery and gleans. Powder of flowers are used for fumigation against mosquitoes. Gum resin of the tree is applied with benefit to cracked feet. Gum resin from the bark is used in catarrhs and when mixed with lime juice and applied, it is useful in scabies & other cutaneous infections. A fluid extract from bark or rind is very beneficial in doses of one teaspoonful every hour or two mixed with two ounces of water in case of hemorrhage from the lungs, the uterus or intestine. The mango, besides being eaten as ripe fruit, is used as follows in India: the twigs & leaves used to clean teeth are said to be beneficial against gums, while the bark is said to be useful for toothache, they also act as astringents & stomachic. Bark is also used for internal hemorrhages, bronchitis, & cataract. The resin is used to treat cracked foot, syphilis, infection of ringworm & fungi.

INTRODUCTION: The genus *Mangifera indica* belongs to the family Anacardiaceae and comprises of 40 species distributed in tropical and sub-tropical parts of South East Asia, Africa and Latin America. It is represented in Pakistan by only one cultivated species, *Mangifera indica* with many varieties. *Mangifera indica* is a large evergreen tree, 10-15 m in height with heavy dome shaped crown and a straight, stout, bole, which bears green linear oblong leaves. Branches are widely spreading whereas flowers are fragrant, nearly sessile, petal twice in length of the calyx lobe. Blossoms are grouped in large inflorescence and a large panicle containing, in some types.

More than 3,000 flowers tiny, reddish, white or yellowish green, pungently odorous and multifarious, staminate and hermaphrodite. Flowering season often starts from December to early February. *Mangifera indica* is grown in plantation and orchards, but more often in home yards, field borders and roadsides avenues, for its fruit (mango) which is a valued food. After reviewing the literature, one tend two believe that some uses may have been passed along from its native home in India as cultivation spread. The parts used medicinally are fruit, immature fruit, leaves, root, bark, seeds (kernels), resins and flowers.

The thirst – relieving pulp of the pericarp promotes blood circulation, while the fruit rind acts as a tonic. The immature fruit, when sliced and dried, is efficacious in septicemia. The leaves are steeped to produce a tea quite a cooling effects; the liquid is used also as a bath to treat fever

and cold. The bark is considered to be diuretic, astringent hemostatic and antirheumatic when used in hot local baths and hot dressings. It is used in a wash for blennorrhoea. The seeds are used to treat stubborn clods and coughs, obstinate diarrhoea, bleeding piles. The raw kernels are sometimes considered to be anthelmintic and for the treatment of diarrhoea. The resin is a remedy for aphthae, syphilis, and dysentery. The resin is useful in cutaneous disease. The juice of kernel is snuffed to stop nasal bleeding. A decoction of the leaves with a little honey added is given in aphonia, the loss of voice. Mid ribs of the leaves calcined are used to remove warts on eyelids. Tender leaves, dried and made into a powder, are useful in diabetics. Smoke of the leaves is said to have a curative effect in some infections of throat diseases.

Ashes of leaves are a popular remedy for burns and scalds. Dried flowers are used in decoction powder and useful in diarrhoea, chronic dysentery and gleans. Powder of flowers is used for fumigation against mosquitoes. Gum resin of the tree is applied with benefit to cracked feet. Gum resin from the bark is used in catarrhs and when mixed with limejuice and applied, it is useful in scabies & other cutaneous infections. A fluid extract form bark or rind is very beneficial in doses of one teaspoonful every hour or two mixed with two ounces of water in case of haemorrhage from the lungs, the uterus or intestine

MATERIALS AND METHODS:

Collection of crude drug: The mango leaves were collected from the local area (chakan , agarkarwadi . Tal- khed , Dist- pune).

Drying and Size Reduction:

Drying: Drying was done in a shaded closed room for 15 days at room temperature.

Size Reduction: Size reduction of mango leaves was done by Hand mill Grinder In laboratory of Siddhant College of Pharmacy Sudumbare, Pune.

Extraction of Crude Drug: A Soxhlet extractor is a piece of laboratory apparatus invented in 1879 by *Franz von Soxhlet*. It was originally designed for the extraction of a lipid from a solid material. However, a Soxhlet extractor is not limited to the extraction of lipids. Typically, a Soxhlet extraction is only required where the desired compound has a limited solubility in a solvent, and the impurity is insoluble in that solvent. If the desired compound has a high solubility in a solvent then a simple filtration can be used to separate the compound from the insoluble substance. Normally a solid material containing some of the desired compound is placed inside a thimble made from thick filter paper, which is loaded into the main chamber of the Soxhlet extractor. The Soxhlet extractor is placed onto a flask containing the extraction solvent. The Soxhlet is then equipped with a condenser.

The solvent is heated to reflux. The solvent vapor travels up a distillation arm and floods into the chamber housing the thimble of solid. The condenser ensures that any solvent vapor cools, and drips back

down into the chamber housing the solid material. The chamber containing the solid material slowly fills with warm solvent. Some of the desired compound will then dissolve in the warm solvent. When the Soxhlet chamber is almost full, the chamber is automatically emptied by a siphon side arm, with the solvent running back down to the distillation flask. This cycle may be allowed to repeat many times, over hours or days.

During each cycle, a portion of the non-volatile compound dissolves in the solvent. After many cycles the desired compound is concentrated in the distillation flask. The advantage of this system is that instead of many portions of warm solvent being passed through the sample, just one batch of solvent is recycled. After extraction the solvent is removed, typically by means of a rotary evaporator, yielding the extracted compound. The percentage of the extracted compound yielded is shown in table 1. The non-soluble portion of the extracted solid remains in the thimble, and is usually discarded.

TABLE 1: EXTRACTION OF CRUDE DRUG

WEIGHT OF CRUDE DRUG	WEIGHT AFTER EXTRACTION	PERCENTAGE OF HYDROALCOHOLOIC EXTRACT
5 gm	0.35 gm	7 %

Percentage of hydro- alcoholic extract was found to be 7%

Procedure: Take 5gm of sample of crude drug place in extractor tube. Add 50ml of ethanol and 50 ml of water in round bottom flask. Apparatus fitted as shown in fig.

completed 30 cycles and remove the extract.

Loss on Drying: The infrared moisture balance is a device for determining the moisture content of materials that do not change their chemical structure while losing water under exposure to infrared radiation. Infrared Moisture Balance is extensively used for testing soils used in construction, chemicals raw materials, agricultural soils, foods, pharmaceuticals, plastics and similar materials (Fig. 1). The balance scale is divided directly in moisture percentages from 0 to 100% in 0.2% divisions. A thermometer is offered for estimating the temperature of the drying chamber. The loss on drying is summarized in table 2.



FIG. 1: INFRARED MOISTURE BALANCE

TABLE 2: LOSS ON DRYING

WEIGHT IN GRAM	WEIGHT AFTER DRYING	% LOSS OF DRYING
5	3.0	40
5	3.5	30
5	3.5	30

Percentage loss of drying: 33.33%

RESULT: *Mangifera indica* have been meticulously studied for its chemical constituents and pharmacological activities. Taking into accounts its anti-tumor and anti-fertility activity plant is great important. Few toxicological studies have been reported. Also the extraction of leaves have been done and found out percentage of mangiferine calculated. The work could also be done in this direction to ensure free utility of the plant.

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