PRELIMINARY PHARMACOGNOSTICAL AND PHYTOCHEMICAL EVALUATION OF *MADHUCA LONGIFOLIA* L LEAVES

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ABSTRACT

The whole plant material of Madhuca Longifolia L leaves was collected and powdered. The powdered material was subjected to successive soxhlet extraction with petroleum ether (40-60^0), chloroform and methanol finally macerated with water so as to get respective extracts. A fluorescence character of powdered material was analysed under ultraviolet light and under ordinary light signifies the characteristics. Physiochemical parameters such as total ash value, acid insoluble ash value and water-soluble ash values were determined which were found to be 8.40, 6.88 and 1.27 % respectively. Moisture content, foreign organic matter, crude fibre content, alcohol soluble extractive and water-soluble extractive were also determined. The percentage yield of pet ether, chloroform, methanol and water were found to be 5.52, 2.82, 19.91 and 6.20 respectively. Preliminary phytochemical analysis of different extracts was carried out. The results were positive for flavonoids, triterpenoids, alkaloids, saponins, phenols and tannins. These studies provide referential information for correct identification and standardization of this plant material.

KEY WORDS

Madhuca longifolia L. leaves, crude extracts, pharmacognostic evaluation and physicochemical analysis.

INTRODUCTION

Madhuca longifolia L. (sapoteaceae) is commonly identified as Mahua. It's a folklore medicinal plant that is commonly used for the treatment of snakebite as antidote. It's an important economic plant found throughout the sub-tropical region of indo-Pak sub-continent [1]. The tree is valued for its oil-bearing seed and flowers which are utilised for alcoholic beverages production. The medicinal properties attributed to this plant are stimulant, demulcent, emollient, heating and astringent. Leaves are lanceolate, narrow at both end, glabrous distinctly nerved. The leaves of *Madhuca* are astringent; the ash of leaves mixed with ghee is often used as dressing for burn and scalds in the indigenous system of medicine [2]. Leaves are useful in arresting secretion or bleeding because of its tannin content. The decoction of leaves or bark can be given internally in rheumatic disease. Decoction of flower and young leaves of tree help in soothing effect of skin. The leaves of *Madhuca* are effective in treatment of bronchitis or the inflammation testicles. The leaves smeared with sesame oil, warm over a fire and bandage on the affected parts provide relief [3]. Therefore, it has become extremely important to make efforts towards standardization of plant material to be used as medicine. Correct identification and quality assurance of starting material is an essential pre-requisite to ensure reproducible quality of herbal medicine which will contribute to its safety and efficiency. *Madhuca longifolia* L has been reported to possess antibacterial activity against   P. aeruginosa, P.vulgaris and S. typhi. Extract of stem bark of *M. longifolia* were served to have better anti fugal activity than leaves. *M. longifolia* is

known to contain many bioactive, some of which are not reported. Hence an attempt will be made for the study of such bioactive. The present study was designed to investigate the pharmacognostical and phytochemical properties of *M.longifolia* L.

MATERIALS AND METHODS:

Plant Material

Madhuca longifolia L. Leaves were collected from Konchavaram forest, Gulbarga Karnataka, Authentication was done by Dr.Y.N Seetharam faculty of botany, Gulbarga University; Gulbarga was a voucher specimen has been deposited in the herbarium (HGUG No- 723).

Determination of fluorescence character

Fluorescence characters of plant material with different chemical reagent were determined under ordinary light and UV light [4].

Determination of physico-chemical parameter

The plant material were subjected for determination of physico-chemical parameters like total ash value, water soluble ash value, acid insoluble ash value, moisture content, foreign organic matter, crude fibre, alcoholic soluble extractive and water soluble extractive [5,6,7].

Extraction of plant material

The leaves of *Madhuca longifolia L* were subjected to shade dried for 5 weeks. The dried leaves were further crushed to fine powered of 22 mesh size and stored in an air tight container at 4°C for further use. The dried leaves powdered were subjected to sequential soxhlet extraction using the various solvents such as pet ether (40-60), chloroform, methanol and water. Finally, extract were evaporated to dryness and percent yield of all extract were determined. All the extract were then stored in a refrigerator till further analysis.

Preliminary phytochemical screening

The presence of various phytoconstituent in plant extract was determined by preliminary phytochemical screening as described by [6, 7, 8].

RESULTS AND DISCUSSION

The results of fluorescence studies of powdered leaves using different reagents are given in Table no.1. Fluorescence is an important phenomenon exhibited by various chemical constituents present in plant materials. Some constituents show fluorescence in visible range in day light. The UV light produces fluorescence in many natural product, (eg alkaloids, berbenine) which do not fluorescent. By applying different reagents some crude drugs are assured qualitatively as given below.

Table-1: Fluorescence analysis of powdered leaves of *Madhuca longifolia*.

S No	Powdered drug	Under ordinary light	Under UV light
1	PPM	Green	Brown
2	PPM+1 M NaOH	Reddish brown	Brown
3	PPM+1 M CH$_3$COOH	Yellowish brown	Light brown
4	PPM+1 M HCL	Yellowish green	Yellowish green
5	PPM+dil HNO$_3$	Yellowish brown	Yellow
6	PPM+1 M CH$_3$OH	Green	Deep green
7	PPM+50% HNO$_3$	Orange	Reddish orange
8	PPM+1 M H$_2$SO$_4$	Brown	Brown
9	PPM+1 M NH$_3$	Yellowish brown	Brown
10	PPM+5% FeCl$_3$	brown	Black

PPM- plant powdered material

The percent yield of Pet ether, chloroform, methanol and aqueous extract were expressed in terms of percentage respectively. Total ash value, water soluble ash value and acid insoluble ash value were found to be 8.40%, 1.27%, 6.88% respectively. The total ash value was relatively high which may be due to high content of carbonates, phosphates, silicates and silica. Ash value is useful in determining authenticity and purity of the drug and also these values are important quantitative standard [9]. Percent weight loss on drying or moisture content was found to be 7.4 because of high value of moisture content is affected by bacteria, fungi growth [10]. Foreign organic matter in powdered plant material was 1.41% this may be contributed to the wildness of plant leading to its contamination in course of its collection. Crude fibre content of plant material was

found to be 22%. Alcohol soluble and water-soluble extractive values were found to be 4.40% and is shown in Table no 2.

Table-2: Physico-chemical properties of *Madhuca longifolia*.

S No	Parameters	Value obtained %W/W
1	Total ash value	8.40
2	Water soluble ash value	1.27
3	Acid insoluble ash value	6.88
4	Crude fibre	22
5	Moisture content	7.4
6	Foreign organic matter	1.41
7	Alcohol soluble ash value	4.40

The results of preliminary phytochemical analysis of different extracts are given in Table no 3. Phytoconstituents of both Methanolic and aqueous extract of *Madhuca longifolia* L may show good response to various pharmacological activities.

Table-3: Preliminary phyto-chemical analysis of different extracts of *Madhuca longifolia*.

Sl No	Constituent	Pet ether	Chloroform	Methanol	Water
1	Phenols	_	_	+	+
2	Flavonoids	_	+	+	+
3	Saponin	+	_	+	+
4	Alkaloids	_	+	+	+
5	Tannin	_	_	_	+
6	Lignin	+	_	_	+
7	Steroids	_	_	+	+
8	Triterpenoid	_	_	+	+

+ ve = Presence, - ve = Absence

CONCLUSION

Madhuca longifolia L. was subjected for preliminary pharmacognostic standardization including phytochemical screening. The present investigation adds to the existing knowledge of *Madhuca longifolia* L and will be quite useful for development of a formulation for treating various ailments.

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