

STUDY OF PHYSICOCHEMICAL PARAMETERS OF MUCILAGE FROM MIMOSA PUDICA LINN. SEEDS

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ABSTRACT

The prospects of herbal polymers are brighter as synthetic polymers but synthetic polymers have certain disadvantages such as high cost, toxicity, environmental pollution during synthesis, non-renewable sources, side effects, less patient compliance, etc. Mucilages are polysaccharide complexes formed from sugar and uronic acid units. Mucilages form slimy masses in water, are typically heterogeneous in composition. The seeds of *Mimosa Pudica* Linn. contain a high proportion of mucilage and it also being used for different therapeutic purposes. The present study was planned to isolate and characterize for its morphological characteristics, identification by chemical tests, Solubility, melting range, pH, Swelling index, Ash values, presence of foreign organic matter, test for lead and arsenic, Loss on drying, Density, compressibility index and angle of repose etc.

Keywords: *Mimosa pudica*, mucilage, Physicochemical, characterization

Introduction

Plants have played a significant role in maintaining human health and improving the quality of human life for thousands of years and have served humans well as valuable components of medicines, seasonings, beverages, cosmetics and dye.

The use of natural gums and mucilage as important part of formulation is with the development of pharmacy and different dosage forms. As general excipients for oral use, eg. In tablets and capsules etc. the options are limited [1]. The prospects of natural polymers are brighter but even here extensive testing will be required. The synthetic polymers have certain disadvantages such as high cost, toxicity, environmental pollution during synthesis, non-renewable sources, side effects, less patient compliance, etc [2]. While the advantages of natural plant-based materials include low cost, natural origin, free from side effects, bioacceptable, renewable source, environmental-friendly processing, local availability (especially in developing countries), better patient tolerance as well as public acceptance, from edible sources, etc [3]. Mucilage upon hydrolysis gives arabinose, galactose, glucose, mannose, xylose and various uronic acids. Mucilages are obtained mainly from seeds or other plant parts. Some are obtained from marine algae, and from selected

microorganisms [4]. In present study the seeds of *Mimosa pudica* Linn. were selected for the isolation of mucilage.

Pharmacognosy of plant Common Names -

Marathi- Lajalu

Hindi- Lajwanti / chui-mui

English- Sensitive Plant / bashful mimosa Family- Fabaceae / mimosaceae Geographical Source- America, Asia.



Materials and Methods

Isolation of Mucilage:

The mucilage of plant *Mimosa pudica* Linn. was collected from seeds. *Mimosa pudica* Linn. was procured from local market in the form of very small brown seeds. Mucilage was extracted by soaking the seeds of *Mimosa pudica* with 10 times its weight of distilled water and kept for 24 Hrs. The viscous solution obtained was passed through the muslin cloth.

The mucilage was precipitated out by addition of 95% ethanol in the ratio of 1:1 by continuous stirring. The coagulated mass was dried in oven at 40 – 45 °C, powdered by passing through sieve and stored in airtight container (yield – 14% w/w).

Characterization of Mucilage:

The separated mucilage was evaluated for its physicochemical characteristics such as its morphological characteristics, identification by chemical tests, Solubility, melting range, pH, Swelling index, Ash values, presence of foreign organic matter, test for lead and arsenic, Loss on drying, Density, compressibility index and angle of repose etc. [5-12].

Results

Table.01 Physicochemical characteristics of mucilage:

Sr. no.	Tests	Observations
1	Description	Brownish white powder
2	Solubility	Forms colloidal solution
3	Smell & appearance	Characteristic & lustrous
4	Identification with rhodenum red	Stains red

5	Melting range	Decomposes above 200°C
6	pH	Neutral
7	Loss on drying	8%
8	Ash value	4.90%
9	Acid insoluble ash	0%
10	Sulphated ash	0.90%
11	Foreign matter	NMT 0.1%
12	Test for heavy metal as lead	20-25 ppm
13	Test for arsenic	less than 1 ppm
14	Test for sulphates	Absent
15	Test for tannins	Absent
16	Test for chloride	Absent
17	Test for carbohydrates	Present
18	Test for uronic acid	Present
19	Swelling index	20
20	Angle of repose	32°
21	Bulk density	0.58 gm/cc
22	Tapped density	0.69gm/cc

Discussion

Mucilage of the plant *Mimosa pudica* Linn has been reported to have gel forming potential for topical application. In view of the easy availability of the plant, the Mucilage from the seeds of the plant *Mimosa pudica* Linn was investigated for its application as suspending agent in pharmaceutical formulations.

The mucilage is isolated by dissolving in water and precipitating in 90% alcohol and dried at room temperature, total yield of mucilage by alcohol precipitation was found to be 14gm % W/W.

The morphological and physical evaluator study of isolated mucilage shows, it is brownish white powder, with characteristic Odour and lustrous in nature. When dissolved in water, it gives neutral, colloidal solution; it is soluble in lukewarm water, practically insoluble in ethanol, acetone, ether and chloroform. Moisture content of mucilage was found to be 8 % was found to be within official limit. Mucilage decomposes above 200°C, which is a characteristic of most of the polysaccharide. The foreign matter in this mucilage was found to be not more than 0.1 and the heavy metal as lead were found to be 20-25 ppm Arsenic was found to be Less than 1 ppm. The swelling index was found to be 20. And ash values as total ash, acid insoluble ash and sulphated ash 4.9, 0 and 0.90% respectively, the 0% of acid insoluble ash value indicate the absence of sandy material.

The isolated mucilage was studied for its physicochemical parameters such as angle of repose, density. The angle of repose indicated that the powder was having good flow. The bulk density and tapped density of mucilage was found to be 0.58 and 0.69 gm/cc. The result of chemical test shows presence of carbohydrate, uronic acid which is general constituent of mucilage. While the absence of Tannins, chloride and sulphate shows the purity of mucilage.

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