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Isolation and characterization of mucilage from *Basella Alba* leaves

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Abstract---Mucilages are polysaccharide complexes formed from sugar and uronic acid units. Mucilages form slimy masses in water, are typically heterogeneous in composition. Mucilages are the byproduct of metabolism, originated and stored in the plant as a part of the plant cell. The leaves of *Basella alba* 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---*Basella alba*, mucilage, isolation, characterization.

Introduction

Mucilages and gums are economic, nontoxic, and easily available and found useful as excipients in pharmaceutical dosage form of both solid and liquid dosage forms [1]. Mucilage's are the byproduct of metabolism of plant cell formed in the cell. Mucilage's are normal plant-cell constitute that exist in specialized histological part such as cell or canal of seeds or in leaves[2] Mucilages are hydrophilic polymer meant for those substances which are soluble or atleast swell very perceptibly in water[2]. This study deals with the isolation, evaluation and study of physicochemical characterization of mucilage from the dried leaves of

Basella alba Linn. var. *alba* (Basellaceae). *Basella alba* also known as “Poi (Hindi), Potaki (Sanskrit) and Pasalakkirai (Tamil)” [3]. *Basella alba* Linn var. *alba* leaves for the proposed study were collected from vegetable market of Dhule (India) and were authenticated from Department of Botany, SSVPS college of science Dhule Maharashtra (India). The fresh collected leaves of *Basella alba* Linn. Were shade dried and used for this study. Aerial part (leaves, stem) of the *Basella alba* Linn. serve as edible plant (vegetable) in many parts of world [4]. These contain different components which have extensively used in constipation, as diuretic, in urticaria, as demulcent, antiulcers,

In present study the leaves of *Basella alba* were selected for the isolation of mucilage.



Materials and Methods

Isolation of Mucilage

The mucilage of plant *Basella alba*. was collected from leaves. *Basella alba* was procured from local market in the form of very small leaves. Mucilage was extracted by soaking the leaves of *Basella alba* 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	Creamish white powder
2	Solubility	Forms colloidal solution With water
3	Smell & appearance	Characteristic & lustrous
4	Identification with rhudenum red	Stains red
5	Melting range	Decomposes above 200°C
6	pH	4.5
7	Loss on drying	3%
8	Ash value	1.5%
9	Acid insoluble ash	0.10 %
10	Sulphated ash	0.95%
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	Present
17	Test for carbohydrates	Present
18	Test for uronic acid	Present
19	Swelling index	20
20	Angle of repose	30°
21	Bulk density	0.55 gm/cc
22	Tapped density	0.65 gm/cc

Discussion

Mucilage of the plant *Basella alba* 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 leaves of the plant *Basella alba* 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 16 % W/W.

The morphological and physical evaluatory study of isolated mucilage shows, it is creamish 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 7 % 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 1.5, 0.10 and 0.95% respectively, the 0.10 % 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 0.55 and 0.65 gm/cc. The result of chemical test shows presence of carbohydrate, uronic acid which is general constituent of mucilage. While the absence of Tannins and chloride shows the purity of mucilage.

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