

**A REVIEW ON OKRA MUCILAGE (*Abelmoschus esculentus* L.) USED AS AN PHARMACEUTICAL
AID**

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ABSTRACT:

The flowering plant *Abelmoschus esculentus* L., often known as lady's fingers, bhindi, okra, or gumbo, is a member of the Malvaceae family. Okra is a crop with several uses because of the variety of fresh stems, leaves, buds, flowers, and seeds. When administered as a blood volume expander or plasma substitute, okra mucilage has therapeutic uses. Because of its high fibre, vitamin C, and folate content, okra is a well-liked health food. Additionally, it is a good provider of potassium and calcium. The edible, greenish-yellow oil that is extracted from okra seeds has a delectable flavour and aroma and contains a lot of unsaturated fats like oleic acid and linoleic acid. The herb has also been used medicinally to treat a variety of conditions, including anti-cancer, antibacterial, hypoglycemic, and anti-ulcer activity⁵⁻⁷, among others. Okra is a significant vegetable crop that offers a wide range of nutritional qualities and potential health advantages. It is renowned for having a lot of antioxidants. The purpose of the current study is to emphasize the phytochemical, toxicological, and pharmacognostic research as well as the nutritional benefits of the plant and its components.

Keywords: Okra Mucilage, *Abelmoschus esculentus* L., Polymers, Binder

INTRODUCTON:

The globe is now becoming more and more interested in natural medications and excipients. Plant-derived polymers have generated a great deal of interest recently because of their numerous medicinal applications, including diluent, binder, and tablet disintegrant, bases in suppository, gelling agents in gels, protective colloids in suspensions, and thickeners in oral liquids. They are mucilage. Because they are less expensive, more readily available, more biocompatible than semi- or synthetic excipients toxicity, affordability, accessibility, calming effect, and non-irritating nature. What do mucides do? Typically, mucilages are ordinary goods. of metabolism, created without causing harm to the plant and/or formed inside the cell (intracellular creation).

Okra is a large annual plant that is grown all over the tropical and subtropical regions of the world, but is most popular in India. The young, green pods are mucilage-rich. Okra is frequently collected and doesn't need to undergo toxicological tests. It has been tested as a tablet binding agent and has produced tablets with favourable hardness, friability, and drug release characteristics. Because they are non-toxic, more affordable, and readily available, natural materials have an edge over synthetic ones.

It is safer, chemically inert non-irritating, biodegradable, biocompatible, and environmentally benign, giving it benefits over the majority of commercial synthetic polymers. When these polysaccharides are extracted in water, they generate a highly viscous solution. Okra mucilage contains polysaccharides such galactose, galacturonic acid, and rhamnose.

METHODS OF EXTRACTION AND ISOLATION OF MUCILAGE FROM OKRA FRUIT

Extraction of aqueous substance Water was used as the extraction medium to remove the naturel mucilage material

Getting the sample ready

The components 1 kilogramme of AE fruits are weighed. It was thoroughly cleaned over the course of an hour using running tap water. These were fully dried after washing in the sun for 15 to 20 days. Once more, dry materials were weighed. (217 gram). The fruit's upper and lower ends were sliced, and seeds was entirely removed before the dried fruit was removed. was divided into little pieces.

Heating the sample

The subsequent steps involved isolating mucilage. The heating mantle was preheated for 10 minutes at a temperature of 60 to 70°C. The dry fruit pieces were cut and placed in a 1L beaker. It received a 1:4 addition of deionized water (217 g of okra and 1.5 kg of water). The heating mantle was then positioned over the beaker. For the mucilage to fully heal, the aforementioned setup was left in place for roughly 7-8 hours. With a glass rod, the preparation was often stirred. The temperature was monitored every 15 minutes in order to keep it between 60 and 70°C. The sludge was strained through a Buchner funnel (260ml) after around 8 hours. The filtrate was allowed to settle overnight at room temperature in a beaker. The filtrate was removed from the decanted container, and the supernatant was transferred into 100 ml dry and clean beaker.

The extract concentration

By evaporating the solution at a temperature of 50 to 60°C in a heating mantle, the supernatant obtained from the aforementioned decantation procedure is concentrated. The samples volume was cut in half to one fifth of what it had been obtained.

The sample precipitation

Three volumes of ethanol were used to wash the concentrated samples. The precipitated was collected after being rinsed three more times with 3 litres of ethanol.

The precipitate drying up

The precipitate was first dried in the sun for two hours, and then it was run through sieve number 18. Place these samples in a hot air oven and keep the temperature between 50 and 60°C for an hour. preserve the sample's ultimate LOD at no more than 3.

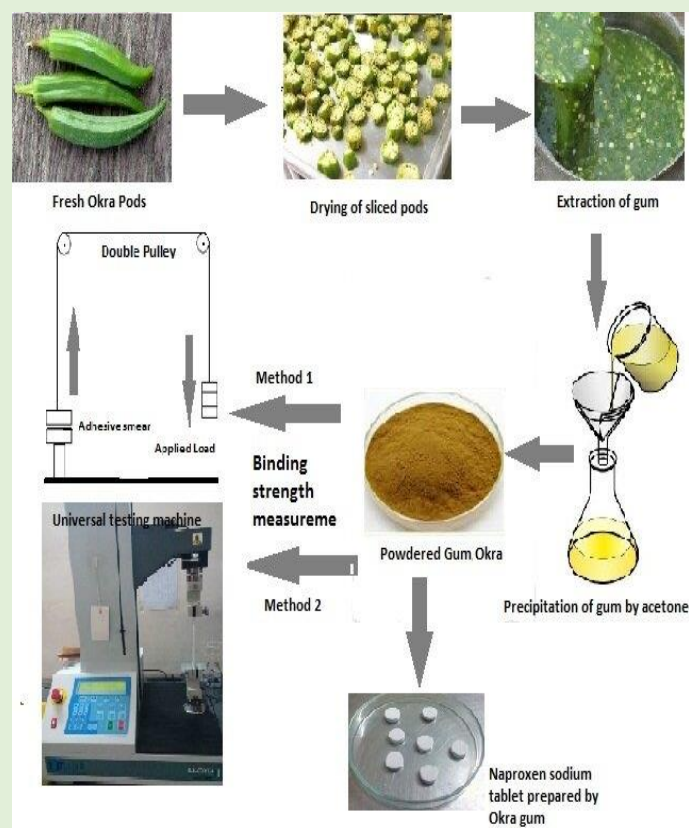


Fig.1: Extraction Process of Mucilage Used for Tablet Preparation

SCIENTIFIC CLASSIFICATION

BIOLOGICAL NAME: *Abelmoschus esculentus*,
Hibiscus esculentus.

KINGDOM: Plantae

DIVISION: Mangoliophyta

CLASS: Mangoliopsida

ORDER: Malvales

SPECIES: *Abelmoschus esculentus*

GENUS: *Abelmoschus*

BINOMIAL NAME: *Abelmoschus esculentus*.

OTHERS NAME OF OKRA

Caribbeans (Okro), China (Quiabo), India (Bhendi), United States (Okra), Europe (Quiabo), Portuguese (Guigambo), Spanish (Gomobe).

PHYSICOCHEMICAL CHARACTERIZATION OF ISOLATED OKRA MUCILAGE

Test for detection of proteins carbohydrates, gums and okra mucilage

Chemical characterization of extracted mucilage can be done with the use of an aqueous solution calculation of the presence of mucilage, alkaloids, lipids, carbohydrate, protein and tannins.

Organoleptic Evaluation of Isolated okra mucilage

The isolated mucilage can be classified according to its organoleptic characteristics such as colour, taste, odour, texture and fracture.

Okra mucilage pH

To make a 1% w/v solution weigh the mucilage separately and dissolve in water. The pH of solution can be measured with a digital pH meter.

BENEFITS OF OKRA

The standard method has the advantage of yielding a sizable amount of mucilage from vegetable. additionally, contaminants can occasionally be found in the result necessitating the addition of large amount of organic solvent during the extraction process. The ultrasound assisted extraction method is superior to the standard method because it produces a better yield while using less solvent and is more environmentally friendly. Additionally, the ultra sound assisted extraction process is not appropriate for large scale production due to higher cost. The MAE process also uses a small amount of solvent, is cost effective and environmentally benign while producing a larger extraction yield in shorter amount of time. This means that MAE is superior to traditional and ultra sound assisted extraction technique for Okra mucilage.

APPLICATIONS OF OKRA MUCILAGE IN PHARMACEUTICAL AID

Diabetes

Reduces sugar level by improving the reactivity of beta cells in pancreas that increase the insulin secretion.

Binder

Extracted mucilage of okra used in tablet formulation shows appreciable effect on physicochemical property like friability, disintegration time, hardness etc.

Gastric and peptic ulcers

Helps in neutralize acid secretion in stomach because mucilage is alkaline in nature.

In GIT

Mucilage has probiotic activity so it is gut bacteria friendly. It also relieves and prevent constipation.

Polymer

Okra mucilage as polymer in tablet shows better drug release.

In cosmetics

Moisturizer, skin cleanser, reduce acne, hair conditioner etc.

Food industry

Used as stabilizer thickening agent in sauce.

Oral dispersible Tablet

Taste masking of bitter drugs.

CONCLUSION

Natural polymer from Okra has been employed in a variety of Medicinal formulation. They are inexpensive, readily available, non-toxic and biodegradable effective for usage as excipient in Pharmaceutical.

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