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A RESEARCH ON FORMULATION AND EVALUTION OF *CASSIA BIFLORA* VATI

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ABSTRACT

Herbal remedies have long been used in traditional medicine due to their therapeutic properties. Cassia biflora Vati is an Ayurvedic tablet formulation that contains Cassia biflora, a medicinal plant with pharmacological qualities. In order to guarantee the quality, effectiveness, and safety of Cassia biflora Vati, this study focuses on its formulation, standardization, and evaluation. The formulation process involved the selection of dried Cassia biflora plant material, followed by its extraction and incorporation into a tablet dosage form using appropriate excipients. Physicochemical parameters such as weight variation, hardness, friability, disintegration time, and dissolution profile were assessed to ensure compliance with standard pharmacopeial limits. Additionally, phytochemical screening and microbial load analysis were conducted to verify the purity and potency of the formulation. The results demonstrated that Cassia biflora Vati met the required pharmaceutical standards, showing good mechanical strength, acceptable disintegration time, and favorable dissolution characteristics. Phytochemical analysis confirmed the presence of bioactive compounds responsible for its therapeutic activity. The microbial analysis indicated that the formulation was free from harmful contaminants, ensuring its safety for consumption. The findings showed that Cassia biflora Vati exhibited favorable dissolution characteristics, good mechanical strength, and an acceptable disintegration time, all of which satisfied the necessary pharmaceutical standards. The presence of the bioactive substances that give it its therapeutic action was verified by phytochemical analysis. The formulation's safety for consumption was guaranteed by the microbial analysis, which showed that it was devoid of dangerous contaminants. In conclusion, Cassia biflora Vati's effective formulation and assessment offer scientific support for its application in conventional medicine. It is advised that more clinical research be done to determine its pharmacological effectiveness in treating different conditions.

KEYWORDS: Ash value, pH, and solubility.

1. INTRODUCTION

Information about a plant with the specific name Cassia biflora is scarce. But it's likely that you're talking about a plant that's a member of the Fabaceae family, specifically the Cassia or Senna genus. Numerous blooming plants in these genera are prized for their vivid yellow blossoms and are used in ecological restoration, gardening, and medicine. If a particular variation of Cassia biflora is being referred to, it is probably a tiny tree or shrub with bi-flowered (two-flowered) inflorescences, which are a feature of certain Cassia species. Numerous Cassia plants fix nitrogen, withstand drought, and draw pollinators like butterflies and bees.. Because of its effectiveness, safety, and few side effects, herbal medicine is becoming more and more popular. The medicinal plant Cassia biflora is well-known for its antibacterial, anti-inflammatory, and wound-healing qualities. The formulation and in vitro assessment of Cassia Biflora Vati are the main topics of this investigation. This particular name does not refer to any well-known herbal or Ayurvedic composition. It would be crucial to specify the intended usage, formulation, and advantages of any medical preparation that contains Cassia biflora.

1.1Introduction of *Cassia biflora* Vati

Biflora Cassia the therapeutic qualities of Cassia biflora, a leguminous shrub with possible health advantages, are used in the herbal concoction Vati. In Ayurveda, vati preparations are herbal formulations that have been solidified and offer easy administration and convenient dosage of plant-based therapeutic components. The twin-flowered cassia, or Cassia biflora, is a flowering shrub that is a member of the Fabaceae family. This plant, which is native to the Americas' tropical regions, is prized for both its therapeutic and aesthetic qualities.

1.1.1 Description and Growth Habits

Cassia biflora is a deciduous to semi-deciduous shrub that typically reaches heights of 6 to 8 feet (1.8 to 2.4 meters) with a spread of 3 to 5 feet (0.9 to 1.5 meters).It features pinnate leaves, each 2 to 3 inches (5 to 7.5 cm) long, comprising 4 to 6 pairs of light green leaflets.The plant produces bright yellow flowers, often arranged in clusters of two, which attract bees and butterflies, enhancing its ornamental value.

1.1.2 Cultivation and Care

Cassia biflora can withstand heat and drought and thrives in sandy soils that drain well and receive plenty of sunlight. It works well for roadside plantings, parks, gardens, and small landscapes. Regular watering during dry spells and sporadic pruning to sculpt the canopy are advised to preserve its health and beauty.

1.2 Pharmacognostical profile

1.2.1 Botanical Description

Table 1: Botanical Description.

Family	Fabaceae (Leguminosae)
Genus	Cassia (or Senna)
Common Name	Two-flowered Cassia
Habit	A shrub or small tree
Leaves	Pinnately compound with elliptical leaflets
Flowers	Bright yellow, arranged in pairs
Fruits	Flat, elongated pods with seeds inside

1.2.2 Macroscopic Features

Table 2: Macroscopic Features.

Stem	Woody, branched, cylindrical, and brownish
Leaves	Pinnate, smooth, with a characteristic smell
Flowers	Yellow, showy, occurring in axillary racemes
Pods	Brownish when mature, containing multiple seeds

1.3 Chemical constituents

Anthraquinones, flavonoids, and other secondary metabolites are among the more than 200 chemical substances found in the Cassia genus of plants.

Table 3: Chemical Constituents.

Flavonoids (quercetin, kaempferol)	Antioxidant properties
Alkaloids	Potential medicinal benefits
Saponins	Foaming agents with antimicrobial properties
Tannins	Astringent properties, used in wound healing
Glycosides	Possible cardiac benefits
Terpenoids & Essential Oils	Anti-inflammatory and antimicrobial activity.

1.4 Pharmacology of *cassia biflora*

1.4.1 Antioxidant Activity: Most likely as a result of the presence of polyphenols and flavonoids, which lessen oxidative stress.

1.4.2 Antimicrobial & Antifungal Effects: Anthraquinones and tannins may be the cause of the antibacterial and antifungal qualities observed for Cassia species

1.4.3 Anti-inflammatory Activity: The anti-inflammatory properties of some species in the genus Cassia may help control pain and swelling.

1.4.4 Laxative Effect: Anthraquinones, which are found in several Cassia species, including Cassia senna, have laxative properties.

1.4.5 Antidiabetic Potential: By altering the metabolism of glucose, certain species of Cassia have demonstrated hypoglycemic action.

1.4.6 Hepatoprotective Effect: Extracts from Cassia species have anti-inflammatory and antioxidant qualities that may save the liver from harm.

1.4.7 Wound Healing Properties: Herbal medicine has long utilized certain species of Cassia to treat wounds

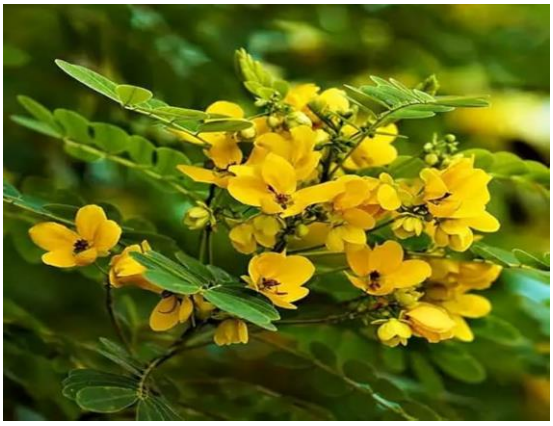

Fig. 1: *Cassia biflora.*

2. MATERIALS AND METHODS

2.1 Material

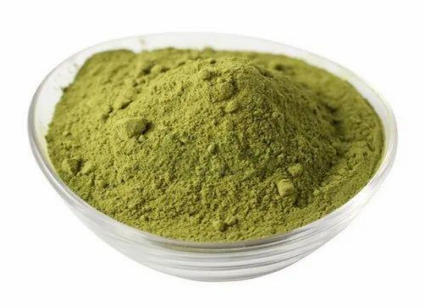

Fig. 3: Cassia biflora powder.

Fig. 2: Triphala.

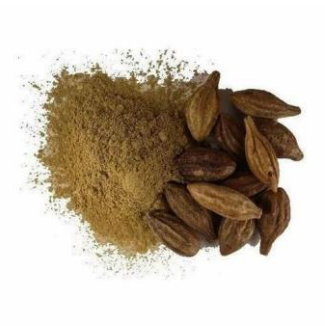

Fig. 4: Haritaki.

Fig. 6: Aloe vera.

Fig. 8: Guggul.

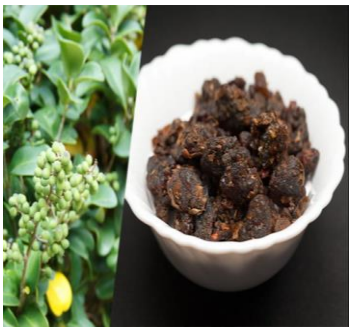

Fig. 5: Black salt.

2.2 Composition of *Cassia Biflora* vat

Table 4: Composition of Cassia Biflora vati

S. No.	Ingredients	Quantity
1	Cassia biflora powder	180mg
2	Haritaki	130mg
3	Triphala	150mg
4	Ginger powder	20mg
5	Black salt	20mg
6	Guggul	QS
7	Aloe vera	QS

2.3 Formulation of Cassia Biflora vati

2.3.1 Drying and Powdering

Gather the seeds, leaves, or flowers of Cassia biflora to maintain their efficacy, carefully wash and shade-drythem. After they are totally dry, use a grinder or a conventional mortar and pestle to ground the mintoafine powder. Remove coarse particles from the powder by sieving it.

2.3.2 Mixing the Ingredients

Take as much powdered Cassia biflora as you need. If there are other herbal substances in the formulation, combine them in the right amounts. To create a paste, add a binding agent (such as honey, jaggery, or gum acacia solution).

2.3.3 Making Vati

Use a tablet-making machine or roll the paste into uniformly little pills. Shape your hands into little, round balls (vati) if you're using them.

2.3.4 Drying the Vati

To maintain their efficacy, spread the produced tablets out on a sanitized surface and allow them to dry in a controlled drying environment or in the shade. To avoid spoiling, make sure they are completely dry before storing.

2.3.5 Storage

Dry Cassia Biflora Vati should be kept in an airtight container. Store away from direct sunlight in a cool, dry location.

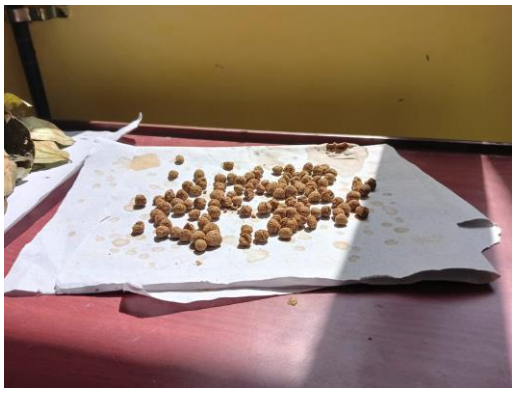

Fig. 9.

2. EVALUATION OF *CASSIA BIFLORA* VATI

3.1 Organoleptic Evaluation of Cassia biflora Vati

3.1.1 Appearance (Color & Shape)

The vati is usually round or oval in shape and has a smooth or slightly rough texture.Depending on the herbs used, it may have a brownish, greenish, or yellowish hue.

3.1.2 Odor (Smell)

It may smell distinctively earthy, herbaceous, or faintly bitter. Some formulations may contain volatile substances that give them a slight pungency.

3.1.3 Taste

Depending on the herbal composition, it may be slightly sweet, bitter, or astringent. There may be a little mucilaginous aftertaste from some ayurvedic vatis.

3.1.4 Texture & Consistency

It should be solid rather than crumbly if it is in tablet form. Because it contains herbal elements, it may have a slightly fibrous or gritty texture when eaten or crushed.

3.1.5 Mouthfeel

When chewed, it may feel slightly moist or dry, depending on the binding agents utilized

3. PHARMACEUTICAL EVALUATION

Pharmaceutical parameters like Weight variation, Thickness, Diameter, Hardness, Friability are determined as per standard protocols of IP.

4.1. Determination of Weight Variation

Twenty tablets were weighed at random, and the average weight was determined. The weight of each tablet was then compared to the average weight.

Table 5: Weight Variation Limits as per Various Pharmacopoeias.

IP/BP	Limit	USP
80 mg or less	± 10%	130 mg or less
80 - 250 mg	± 7.5%	130 - 324 mg
>250 mg	± 5%	>324 mg

4.2. Determination of Thickness and Diameter

A Digital Vernier calliper, which allows for precise measurements and gives information on the variation between the tablets, was used to measure the diameter and thickness of a single crown tablet.

4.3 Determination of Hardness

Monsanto or Pfizer tablet hardness testers can be used to determine a tablet's hardness. For determining hardness, we have used a Monsanto hardness tester.

4.4 Friability test

After being weighed, a batch of tablets is put into the device, where they will roll and be repeatedly shocked as they descend six inches with each rotation. After 100 rotations or 4 minutes of therapy, the pills are weighed, and the weight is compared to the starting weight. The amount of material lost due to abrasion is used to calculate tablet friability. a value represented by a percentage.

4. RESULTS

Table 6: Organoleptic evaluations of Cassia Biflora vati.

S. No.	Parameter	Observation
1	**Odour**	Aromatic
2	**Taste**	Bitter after chewing
3	**Touch**	Smooth

Table 7: Stability and storage condition.

Stability Parameters	1St day	7th days
In light place	Stable	Stable
In dark place	Stable	Stable
Room temp.	Stable	Stable
Refrigerator temp.	Stable	Stable
Freezing temp.	Stable	Stable
In plastic container	Stable	Stable
In tin container	Stable	Stable
In glass container	Stable	Stable

Table 8: Solubility study of vati.

S. No.	Solvents	Soluble/ insoluble
1	Water	Soluble
2	0.1N HCL	Soluble
3	Nacl 10%	Soluble

Table 9: Results for Pharmaceutical Evaluation of Vati.

S. No.	Evaluation Parameter	Result
1.	Weight Variation	711mg ± 5%
2.	Thickness & Diameter	4.6mm
3.	Hardness	4.1kg/cm2
4.	Friability	0.71%
5.	pH	6.23

5. CONCLUSION

Like other Cassia species, Cassia biflora probably has laxative, antibacterial, anti-inflammatory, and antioxidant qualities. Nevertheless, there aren't many particular pharmacological studies on this plant, therefore further investigation is required to determine its precise therapeutic advantages.

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