



GOLDEN SHOWER: A WONDER MEDICINAL PLANT AND ITS PROCESSING TECHNOLOGY

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ABSTRACT These investigations were conducted on Golden Shower [*Cassia fistula* L./ Jwarantak/ Amaltaas] which is highly medicinal but still underutilized. Investigations involve pharmacognostic studies and processing of the plant. The pulp obtained from yellowish-brown pods was processed for approximately 72 hours at 600 C in oven. The processed product so obtained was a black colored amorphous mass. This product finds multifarious uses in human ailments like detoxification of toxins of ambiguous origin, amoebiasis, chest pains, in piles, nose bleeding, tracheitis, pharyngitis, laryngitis, bronchitis, skin problems, febrifuge, vermifuge, especially effective in the weakness of intestine and other neuromuscular dysfunctions. Further, it is considered as safest preparation against acute and chronic constipations. Apart from wonderful medicinal usages it is successfully used as pharmaceutical aid for preparation of tablets. It is used as binder and disintegrating agent in Vatti formulations. The experimental Shama Vattis were prepared from this unique pharmaceutical agent to avert the problems of constipation that is most commonly seen in all Vattis due to traditional acacia gum binders. It was concluded that species should be explored further for making processed products in different systems of healing.

KEYWORDS : Febrifuge; Tracheitis; Pharyngitis; Detoxification

1. INTRODUCTION

Plants have been used since ancient times for healthcare purposes. They have served as significant components of pharmaceuticals, nutraceuticals, cosmeceuticals and other miscellaneous products. Plants play pivotal role in the prophylactic and in treatment of multiple disorders and diseases of human beings and animals. India has a great potential in traditional healthcare system by the means of Ayurveda. Medicinal plants offer alternative remedies for various ailments in safe and efficient way. These have enough potential to cure some incurable diseases also that need to be explored. According to WHO, people of developing countries majorly depends up on the herbal medicines for primary healthcare. India is rich in indigenous herbal resources due to its diverse agro-climatic zones. Golden shower (*Cassia fistula* L.) is one of the most resilient moderate size deciduous tree found throughout the country. It is used in different systems of healings including Ayurveda, Unani and Siddha.

Details of Plant^[1-15]

Botanical Name: *Cassia fistula* Linn.
Hindi Name: Amaltas
English Name: Golden Shower
Family: Caesalpiniaceae

2.0 MATERIAL AND METHODS

2.1 Plant collection

Leaves, flowers and pods of Golden shower were collected from our organically cultivated medicinal plants field laboratory (No. 9) located at Dev Sanskriti Vishwavidyalaya in month of march. The pharmacognostic studies were performed for proper botanical identification and evaluation for fetching therapeutic quality of processed products. Quality of crude drug material affects the finished products as stated by WHO-GACP and GHPP guidelines. Plant parts were collected in separate trays and brought to processing laboratory. All the samples were kept at room temperature before performing pharmacognostic and processing studies.

2.2 Pharmacognostic studies

These studies were performed by following standard procedures of Indian Pharmacopoeia (I.P.) and Ayurvedic Pharmacopoeia of India (A.P.I.).

2.2.1 Observation of Different Plant Parts

Leaves: Paripinnate, 35-62 cm long, rachis terete, leaflets 4-8 pairs, ovate-oblong, acuminate and entire

Flowers: Bright yellow, pendulous axillary racemes 30-45 cms long, pedicels 0.8-3 cms.

Pods: 30-56 cms long, 2.5-3.5 cms in diameter, cylindrical, smooth, hard surface, indehiscent, green during immature stage and dark brown during fully ripped stage. Pods divided internally by septa and each containing single seed.

Seeds: Golden brown in colour about 1 cm in diameter.

2.2.2 Physical Parameters

Physical parameters of the crude drug were studied by following Standard procedures including A.P.I. (Ayurvedic Pharmacopoeias), I.P. (Indian Pharmacopoeias), National Formulary, and monographs. Dried crushed pods without seeds were used in this test. The following evaluation parameters were used:

Total Ash
Acid-insoluble Ash
Alcohol soluble extractive
Water-soluble extractive

2.3 Processing Technologies

The processing technology is based on fundamental principle of good manufacturing practices. The physiologically mature pods were only used in the processing. The trees of Golden shower (*Cassia fistula* L.) were organically cultivated in our organic field laboratories (Department of Medicinal Plants Sciences, Dev Sanskriti Vishwavidyalaya, Haridwar (U.K), India). The WHO-GACP and GHPP practices were also complied along with organic cultivation. These practices were helpful in further enhancing therapeutic efficacy, safety and potential of the processed products. The therapeutic index of the processed products also increased. The processed product is a wonderful agent for pharmaceutical, cosmeceutical and nutraceutical applications. The efficacy of the processed product as pharmaceutical aid (binder and disintegrator) is directly linked to its safer and effective processing activities.

2.3.1 Preliminary Treatment Of The Raw Material

2.3.1.1 Cleaning and washing

Pods were manually sorted to remove impurities and washed with water. Only yellowish-brown pods were used in processing. These pods have a higher amount of pulp as compared with dark blackish brown pods. In dark blackish-brown pods pulp dried with septa and seeds that are difficult to extract. Although, it has no adverse impact on the quality of finished products processing efficiency declines.

2.3.1.2 Drying of Pods

Properly washed pods were dried with the help of a cotton cloth.

2.3.2 Crushing of Pods

Selected pods were crushed manually (Caution: The pulp contains various types of tannins and coloring chemicals, wear gloves and apron before processing).

2.3.3 Collection of Pulp

Initially, the borosilicate glass container was weighed. The crushed pods and pulp were collected in a glass containers. Finally weighed the container and the quantity of material was calculated. The lukewarm distilled water (q.s.) was added into the container. The adhered pulp was extracted in lukewarm water (pulp more soluble in lukewarm water as compared with normal temperature water) with the help of

glass rod (Caution: Avoid the use of metallic spatula or spoon due to reactive nature of pulp with metallic containers).

2.3.4 Sieving

The liquid concentrate was sieved twice. First, the concentrate was passed through #85 sieve and they're after with double-layered cloth.

2.3.5 Drying

Firstly the borosilicate glass container was weighed. The concentrated solution was poured into the container. The required temperature (60° C) was set in the oven through the control panel. The process continued for approximately 72 hrs until the excess water evaporated (Caution: Avoid overheating otherwise therapeutic properties of the products will be deteriorated). The black colored amorphous mass was obtained. Finally weighed the container and the quantity of the product obtained was calculated.

2.3.6 Storage

The processed product (amorphous mass) was stored in airtight glass container (Caution: Product has hygroscopic nature)^[16-27].



Figure: 1 & 2 (processed Product And Storage In A Glass Container)

3. RESULTS AND DISCUSSION

India is an emerging country. Its rich bio-heritage has great potential to cure various disorders and diseases through medicinal plants. The Golden Shower (*Cassia fistula* L.) is help in curing a number of major lifestyles and aging oriented disorders and disease including amoebiasis, chest pains, in piles, nose bleeding, tracheitis, pharyngitis, laryngitis, bronchitis, skin problems, febrifuge, vermifuge, anti-diabetic, anti-inflammatory, and anti-tumorigenic, especially effective in the weakness of intestine and other neuromuscular dysfunctions. The Standards texts were used as referencing sources before performing testing work (Ayurvedic Pharmacopoeias, Indian Pharmacopoeia and Nation formularies). The tests were performed in triplicates. The physical evaluation results of dried crushed pods without seeds are given as under:

Total Ash: NMT 7%

Acid-insoluble Ash: NMT 1%

Alcohol soluble extractive: NLT 18%

Water-soluble extractive : NLT 42%

The percentage of secondary metabolites (active constituents) increased by Organic cultivation, WHO-GACP, and WHO-GHPP practices as clearly indicated by increase in percentages of Total Ash, Acid-insoluble ash, Alcohol-soluble extractive values, and water-soluble extractive values while compared with standard texts. The accelerated stability studies of processed product were also performed by the following the protocol of ICH guidelines. The Linear regression method was used for the extrapolation of the shelf life of the processed product. The shelf life of the product was evaluated approximately 2 years in glass containers. Although, different containers specific testing have not been performed. The product was used in healing different disorders and diseases that are based on self-experiences, ethnopharmacy, classical and modern literature. The researcher explored this proceed product (amorphous mass) as pharmaceutical aid (binder and disintegrator) in his other experimental work of *Vattis* formulation. The *Vattis* formulated from this product showed high disintegration and dissolution rate resulting in higher bioavailability of the drugs. This product reputed for alleviating the problems of constipation most generally caused by traditional binders of *Vattis*. This product may show synergistic effects for healing and binding properties. Further, it needs to be explored in details either in terms of suitable drug combinations or for enhancing the bioavailability of marketed formulations.

4. CONCLUSION

The medicinal plants are biosynthetic laboratories for various chemical compounds that may further serve as “lead molecule” for the development of novel agents for incurable disease also. So, the present research paper gives a direction for future investigators to carry out research on the medicinal plants and also exploring their usages as pharmaceutical aid. These would meaningfully contribute to nation-building and economic development of the country along with sustainable management of resources while addressing the need for improvement in currently marketed drug formulations in a different systems of healing (Ayurveda, Unani, Homoeopathy, Traditional Chinese Medicine, Jamu (Indonesia), Japanese Chinese Medicine (Kampo), and Korean Chinese Medicines).

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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