

## Standardization of *Ficus Benghalensis L.* Bark (*Nyagrodh Twak*)- National Tree of India

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### Abstract

**Introduction:** Worldwide use of Herbal medicines is limited due to lack of their lack of standardization process. Lack of quality control can affect the efficacy and safety of drugs leading to health problems in the consumers. *Nyagrodh* (National tree of India) amongst *Panchakshari Vrksa* is considered as anti-inflammatory having properties of healing and coagulation.

**Material & Methods:** *Nyagrodh Twak* was collected from herbal garden and its *churna* was prepared for testing on various analytical parameters as per PLIM Protocol for testing of ASU Medicines.

**Results:** All the analytical parameters viz. foreign matter, Total Ash content, Total Acid-insoluble Ash content, Water soluble extractive and Alcohol Soluble Extractives were found to be in accordance with the standard values as given in Ayurvedic Pharmacopoeia of India.

**Conclusion:** Physico-chemical analysis of *Nyagrodh twak* taken for present study qualifies all the Quality specification as per API and can be employed for further studies.

**Keywords:** *Nyagrodh*, standardisation, *vata*, *ficus bengalensis*

### Introduction

Our ancient *Vedas* set forth that trees should be praised for their inexorable part in human life. In Hinduism the leaf of *Nyagrodh* tree is said to be the resting place for the Lord Krishna. In *Bhagavad Gita*, Lord Krishna said "there is a Banyan tree, which has its roots upwards and its branches down and the Vedic hymns are its leaves. One who knows this tree is the knower of Vedas" (Bhagavad Geeta 15.1).

This tree is often called as "*Kalpavriksha*", a Sanskrit word which means "a divine tree that fulfils wishes". Married Hindu woman worship the Banyan tree to have a long and happy married life (Badh Purnima).

God Shiva as Dakshinamurthy nearly always sitting in silence under the Banyan tree with Rishis at his feet. It is notion of as flawlessly symbolizing perpetual life due to its seemingly incessant expansion<sup>[1]</sup>.

*Nyagrodh* is included under *Kalpavruksha* by *Acharya Charaka* employing its use in *keeta visha badha*<sup>[2, 3]</sup>. *Acharya Vagbhatta* also included *Nyagrodha* in *Kalpavruksha*. Bark of *Nyagrodh* acts as antibacterial and astringent. Topical use of bark reduces burning sensation, helps in healing of wound. Research has proved the efficacy of *Nyagrodh twak lepa* in Honey Bee poisoning<sup>[5]</sup>. To cope up with emerging needs of public health, pharmaceutical industries and market worldwide, standardization and optimization of Ayurvedic preparations are required<sup>[4]</sup>. Keeping this thing in mind,

*Nyagrodh* tree was taken as study drug for present research work.

### Material & Methods

The present study was conducted at Yashwant Ayurvedic College PGT & RC, Kodoli, Maharashtra. To ensure the quality of any drug it is necessary to standardize it before using it for any experiment. So *Nyagrodh twak churna* (*Ficus benghalensis L.*) was tested by phytochemical analysis at Authorized laboratory of Pharmacy College.

**Collection of *Nyagrodh Bark*:** Raw sample of *Nyagrodh twak* was collected from herbal garden of college and was dried for 7 days under shade.

**Authentication:** Authentication of *Nyagrodh twak* was done at Authorized laboratory of Pharmacy College.

**Sample Preparation:** Bark of *Nyagrodh* was grinded in a mixer and powdered form was obtained from it and again it was filtered in muslin cloth to obtain fine light brown colored powder of *Nyagrodh twak*.

### Analytical Parameters

1. **Total Ash Content:** Silicon crucible was washed with distilled water and dried in oven at 110°C and put in desiccator and then weighed as A. 2gm of dried powder

is taken and weighed as B. Then crucible with powder kept in the muffle furnace at temperature 600 degree Celsius for 2 hours. Then it was transferred to the desiccator for cooling. Accurate weight was taken after cooling as C. Total ash content is calculated as:

$$\text{Total ash content} = \frac{\text{weight}(C-A) \times 100}{\text{weight}(B-A)}$$

This value gives information about the inorganic impurities adulteration in the sample.

- 2. Total Acid Insoluble Ash Content:** Weight of empty crucible was taken, accurately weighed ash was taken in it. Boiled the ash for 5 minutes with 25ml of dilute hydrochloric acid, the insoluble matter in a crucible was collected on an ashless filter paper, washed with hot water and ignited to constant weight. The percentage of the acid insoluble ash content was calculated with reference to the original weight taken of the air dried sample for the analysis.

$$\text{Acid insoluble Ash} = \frac{\text{weight of insoluble ash} \times 100}{\text{weight of sample taken}}$$

- 3. Water Soluble Extractives:** 10gm of fine powder of sample was soaked in 100 ml of chloroform saturated water refluxed for 4 hours, cooled and filtered. 10 ml of filtrate was taken in a petri dish, evaporated for dryness at temperature 100°C, weighed the residue. Water soluble extractives were obtained from the following formula:

$$\text{Residue} \times \frac{100}{\text{weight of sample}} = \text{percentage of water soluble extractives.}$$

This gives information about the water soluble adulterants in the sample.

- 4. Alcohol soluble Extractives:** 5gm of the powdered drug sample was weighed and put in a conical flask with 100 ml alcohol of a specific strength for 24 hours, shaken it frequently during six hours and allowed to stand for 18 hours. Then it was filtered rapidly, taking precautions against loss of solvent, 25 ml of the filtrate was evaporated to dryness in a tared flat bottomed shallow dish and dried at 105°C to constant weight and weighed. With reference to air dried drug the percentage of Alcohol Soluble Extractive was calculated from the following formulae-

$$\text{Weight of residue} \times \frac{100}{\text{weight of sample}}$$

This gives information about the organic adulterants in the sample and also about the strength of the sample.

## Results

**Table 1:** Comparison of Results with Standard values.

S. No.	Analytical parameter	Standard values	Results
1	Total ash content	Not more than 8%	7.2%
2	Water soluble extractive	Not less than 8%	11.2%
3	Alcohol soluble extractive	Not less than 6%	8%
4	Acid insoluble ash	Not more than 3%	2.1%
5	Foreign matter	Not more than 2%	1.5%

## Discussion

The main aim of the analysis is to check the quality for obtaining desired therapeutic effect. Hence, it is necessary to control batch to batch variation, which is possible only through standardization protocols. Standardization implies confirmation of any drug identity and determination of its quality and purity. The quality control standards of various medicinal plants, used in indigenous system of medicine, are significant nowadays in view of commercialization of formulations based on medicinal plants. The quality of herbal drugs is the sum of all factors, which contribute directly or indirectly to the safety, effectiveness, and acceptability of the product [6].

Results revealed that all the analytical parameters were in accordance with reference values as shown in table no.1.

## Conclusion

*Nyagrodh* or *Vata* tree is easily identified by a lay-men, so can be employed as an emergency treatment for various types of insect bite as it is economical and free of cost available all over the India. Standardization of drugs is needed to overcome the problems of adulteration and is most developing field of research now. Therefore, there is an urgent need of standardized drugs having consistent quality.

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