

PHYTOCHEMICAL AND PROXIMATE ANALYSIS OF SEED OF *BAUHINIA RACEMOSA* LAM

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ABSTRACT

Bauhinia racemosa Lam. belongs to Family Fabaceae. It is a small tree commonly known as Apta which is found in India, Ceylon, and China. The *Bauhinia racemosa* Lam. is popular in India as tribal pulses. Roasted seeds are eaten by tribal people. The aim of the present study is to carry out the phytochemical study of immature seeds while proximate analysis of immature and mature seeds. Ash value was determined by the method of AOAC (1990). Crude fat, crude fiber contents were accomplished by a method of Sadasivam and Manickam (1992). Moisture content (69.5 ± 0.5 %) and crude fibre content (5.4 ± 0.31 %) of the seed was higher in the immature stage. Powder behavior revealed the presence of alkaloid, tannin, cysteine, anthraquinone glycoside, xanthoprotein; steroids etc. The results obtained show the study is helpful for identification and authentication. Proximate analysis determining the nutritional value of seeds of *B. racemosa* Lam.

Keywords: *Bauhinia racemosa* Lam., Antioxidant, Phytochemical screening, Seed.

1. INTRODUCTION

Bauhinia racemosa Lam. is a small tree., the bark is grey in color. Leaves are bilobed orbicular or suborbicular. Flowers are white or pale yellow in color with narrowly oblanceolate petals. Medicinal herbs are widely intent by the greater number of people because seeking for side-effects free of treatment. Overall, 80% of the world's population has dependability in traditional medicine, chiefly based on plant drugs for their primary health care. Plants are rich in nutrients furthermore they are the chief source of foodstuff [1]. Uses of *Bauhinia racemosa* Lam. are in traditional medicine for the treat various ailments. The stem bark of the plant is an astringent and is used in the treatment of a headache, fever, skin diseases and in tumors [2,3]. A decoction of the bark is used to wash abscesses, warts and wound cleaning and skin diseases. Bark pest is useful in lymphadenitis and inflamed parts. Flowers are used in bronchitis and cough [3]. Different Tribal community use different plant parts of the plant to cure disease. The oraons community uses fresh leaf paste to cure urinary diseases. Some ethnic communities give stem bark extraction with cow milk (3:2) as the cure of glandular inflammation [4]. Bhills of Rajasthan use the plant bark for diarrhea and dysentery and eat the fruits [5]. All human beings require a number of complex organic compounds as added [6] caloric requirements to meet the need for their muscular activities. Proteins, fats, carbohydrates form a major portion of the diet, their nutritive value is important [7]. In the present study, the medicinally important plant was taken for investigation of

nutritive value of seeds at the immature and mature stage.

2. MATERIALS AND METHODS

Plants were collected from Tillarinagar of Kolhapur Maharashtra, in the month of September to March and identified with the help of Flora of Maharashtra [8] and flora of Kolhapur district [9].

2.1. Macroscopic study

The Macroscopic study was carried out by the method of Trease and Evans [10]. Collected Plant material i.e. pods was dried under the shade and seeds were separated, dried seeds were powdered with the help of electric grinder.

2.2. Powder behavior and fluorescence study

This powder was used further to study powder behavior and fluorescence study of the seed with different chemical reagents. Fluorescence study was done under natural light and fluorescent UV light at a short wavelength (223nm) and long wavelength (566nm) [11, 12].

2.3. Phytochemical analysis

Extractive values were determined with different solvents like Petroleum ether, Chloroform, Acetone and water. The percentage yield of extract, preliminary phytochemical tests of extracts were performed using specific reagents by methods of Trease and Evans [13], Raman [14], Kokate et al. [15], Kokate [16] and

Khandewal [17], AOAC [18]. Ash value was determined by following the method of AOAC [18] while crude fat, crude fiber contents were determined by following the method Sadasivam and Manickam [19]. Crude protein contents were calculated by multiplying the total nitrogen content by factor 6.25 [18].

2.4. Statistical analysis

All the experiments were carried out in triplicates (n=3) and represented as average.

3. RESULTS AND DISCUSSION

Pods are stalked, flat and turgid, about 10.1 to 21.3 cm long and containing 12 to 16 seeds. It is compressed, rounded at apex and about 1.2×0.5cm to 1×0.9 cm. The powder behavior revealed the presence of Tannin, Alkaloid, Cysteine, Xanthoprotein, Oil, steroids and Anthraquinone glucosides (Table No.1). Fluorescence study is tabulated in Table No.2. The phytochemical screening showed the presence of coumarins, flavones, tannin, Anthraquinones, Xanthoprotein and carbohydrate, results were depicted in table No.3. It revealed the tannin present in higher amount in extracts of aqueous, carbohydrate in chloroform and acetone. In the aqueous extract, the yield is 21.5% which is high in comparison to in another solvent (Fig.No.2). The Pharmacognostical evaluation would give admirable information for the future studies. The proximate analysis depicted in fig No.3. It shows that moisture content ($69.63 \pm 0.1\%$) Ash content ($4.8 \pm 0.53\%$) and crude fiber content ($5.4 \pm 0.39\%$) higher in immature seeds while the dry matter ($89.4 \pm 0.31\%$), crude fat content ($9.2 \pm 0.5\%$) and crude protein content ($14.39 \pm 0.1\%$) is higher in mature seeds. The pharmacognostic evaluation would give admirable information for the future studies. Phytochemical study carried out on stem bark of *Bauhinia purpurea* L. in which preliminary screening revealed the presence of carbohydrate, glycosides saponin, sterols and triterpenoids while alkaloids and resins are absent in methanolic extract. Powar and Nasreen analyzed the phytochemical screening in *Bauhinia racemosa* and *Dolichandrone falcate* both the plant of leaves shows the presence of tannins, alkaloids, glycosides, steroids, and Saponin [20]. In the present study will implement the information about the nutritional value of plant and phytochemical analysis has shown that it has interesting phytochemical bio constituents.

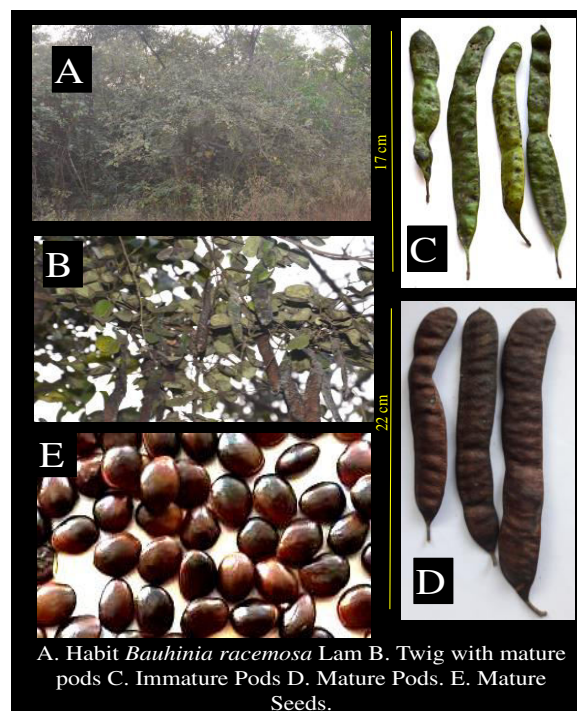


Fig.1: *Bauhinia racemosa* Lam. A. Habit, B. Flowering twig, C. Immature pods, D. Mature pods, E. Mature seeds

Table 1: Powder behavior with different chemical reagents

Reagent	Color	Inference
Powder as such	Jasmine yellow	-
Powder+5% FeCl ₃	Olive green	Tannin present
Powder+ Picric acid	Yellow	Alkaloids present
Powder+40% NaOH + Lead acetate	Earth yellow Brown	Cysteine present
Powder+Conc.HNO ₃ + Ammonia	Orange yellow	Xanthoprotein present
Powder+ Sudan III	Red	Oil present
Powder+5% KOH	Olive drab green	Anthraquinone glucosides
Powder + Aq. NaOH	Olive yellow	Flavanoides present
Powder+ H ₂ SO ₄	Dark green	Steroids absent

Table 2: Fluorescence Study of powder with different chemical reagent in Visible and U.V. light

Powder with chemical reagent	Visible light	Short wavelength	Long wavelength
Powder as such	Jasmine yellow	Olive drab green	Black
Powder+ distilled water	Jasmine yellow	Olive drab green	Black
Powder+1N NaOH in D.W.	Chocolate brown	Umber brown	Black
Powder+10% HCl	Earth yellow brown	Olive drab green	Black
Powder+Conc.HCl	Bronze brown	Olive drab green	Black
Powder+Conc.HNO ₃	Sunglow yellow	Olive drab green	Black
Powder+Conc.H ₂ SO ₄	Sepia brown	Dark olive green	Black
Powder+Acetone	Copper brown	Green yellow	Black
Powder+5% KOH	Burnt umber brown	Olive green	Black
Powder+ 5% Iodine	Jasmine yellow	Olive drab green	Black
Powder+ 5% FeCl ₃	Apple green	Olive green	Black

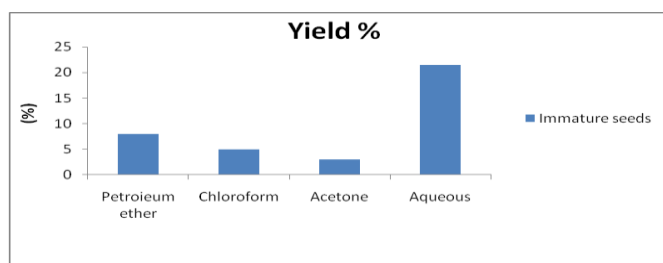


Fig. 2: Extractive values of seed of *Bauhinia racemosa* Lam

Table 3: Preliminary phytochemical Screening

Compound	Pet. ether	Chloroform	Acetone	Aqueous
Phenols	-	-	-	-
Anthraquinones	-	-	-	-
Flavones	-	-	++	++
Tannins	+++	++	++	+++
Coumarins	-	-	+	-
Saponins	-	-	-	-
Alkaloids	-	-	-	-
Xanthoproteins	-	-	-	+
Carbohydrate	++	+++	+++	++
Glycosides	-	-	-	-
Oil	+	+	+	++

+++ High, ++ Moderate, + Slight, - Negative

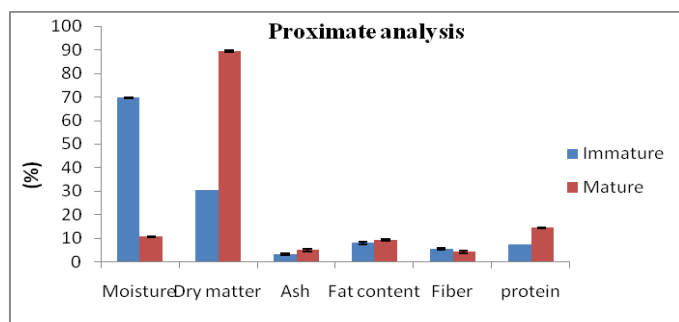


Fig.3: Proximate analysis of seed of *Bauhinia racemosa* Lam.

4. CONCLUSION

The phytochemical study is ensuring for proper identification and to check adulteration, quality, and safety for the human use. It also helps to endorse the purity of drugs, validate quality control standards and further investigation. Proximate analysis helps to know the nutritional value. From this study it is concluded that the immature seeds and mature seeds are nutritive. Therefore, Nutraceutical analysis is useful for further drug development process.

5. REFERENCES

- Manoharan S, Kaur J. *Am J Pharm Tech Res*, 2013; **3**:149-69.
- Gupta M, Upal KM, Ramanathan SK, Thangavel SK. *Acta Pharmacol Sin*. 2004; **25**:1070-6.
- Kirthikar KR, Basu BD. Indian medicinal plants, 2nd ed., Bishen Mahendra pal Singh Dehradun, India 1975; Vol 2.
- Joshi P. *J. Econ. Tax. Bot.* 1982; **13**:257-66.
- Jain SK. *Proc. Nat. Inst. Sci. India*, 1964; 30.
- William B. Encyclopedia Britannica Inc. 1972; 16, 802-5.
- Indrayan AK, Sharma SD, Kumar DN, Kumar M. *Curr Sci*, 2000; **89**:1252-63
- Almeida MR. Flora of Maharashtra, Vol 1. Orient Press, Mumbai. 1998.
- Yadav SR, and Sardesai MM. Flora of Kolhapur District, Shivaji University Press, Kolhapur. 2002.
- Trease GE, Evans WC. Pharmacognosy, Great Britain at the University press Aberdeen. 1972.
- Chase CR, Pratt R. *J Am Pharma Assoc*, 1949; **38**:324-31.
- Kokoski CJ, Kokoski RJ, Slama FJ. *J. Am. Pharm Assoc.*, 1958; **47**:715-27.
- Trease GE, Evans WC. Pharmacognosy, 12th ed. English Language Book Society, Balliere Tindall, London 1985.
- Raman N. Phytochemical techniques. Publishing agency New India publications. New Delhi, 1st edition: 2006 ; 19-25.
- Kokate CK, Purohit AP, Gokhale SB. Methods of crude drug evaluation Pharmacognosy, Nirali Prakashan, Pune 1995.
- Kokate CK. Practical Pharmacognosy, Vallabh Prakashan, Pune. 2002.
- Khandewal KR. Practical pharmacognosy techniques and experiments Nirali Prakashan, Pune: 2005.
- AOAC. Official Methods of Analysis. Association of Official Analytical Chemists, Washington. DC. 1990.
- Sadasivam S, Manickam A. Biochemical Methods for Agricultural Sciences. Wiley Eastern Ltd., New Delhi. 1992.
- Powar DS, Nasreen S. *Int J Appl Res*, 2016; **2**:243-5.