

## Pharmacognostic and Phytochemical analysis of different market samples of Ashoka (*Saraca indica* Linn)

### Abstract

Different market samples of Ashoka (*Saraca indica* Linn) were analyzed to screen the genuinity of the samples available in the market in the name of Ashoka. All the samples were subjected for Pharmacognostic and Phytochemical analysis and found that all the samples were derived from the different botanical sources.

**Key words:** Ashoka (*Saraca indica* Linn), Pharmacognostic, Phytochemical.

\*Dr Nataraj H R  
\*\*Dr S K Hiremath

### INTRODUCTION:

Ashoka (*Saraca indica* Linn) is one of the extensively used medicinal plants in Ayurveda. It is used to treat gynecological disorders like menorrhagia and preparations like Ashokarista are available in the market<sup>1</sup>. But this plant has been named one of the endangered plants by National medicinal plants board<sup>2</sup> but as such scarcity is not observed in the market. Easy availability of an endangered species in the market was the motivation behind conducting this study.

Ashoka is a small to medium sized tree handsome evergreen tree quite beautiful when in full bloom. With somewhat erect though not very straight trunk covered with grayish to dark brown scabrous bark and numerous spreading somewhat drooping branches bearing nearly sessile large abruptly pinnate leaves. One to two feet long having 2-3 pair of large oblong lanceolate leaflets, large dense corymbs of brilliant orange red fragrant flowers and rigidly corecious or almost woody smooth turgid pods about six inches long containing four to eight seeds. The plant usually flowers from January to march fruits appear from May onwards<sup>3</sup>.

### MATERIALS & METHODOLOGY:<sup>4,5,6,7,8</sup>

Market samples were collected from four different markets viz Belgaum, Bengaluru, Mysore, and Pune and named them as Sample A, B, C and D respectively. Genuine sample is procured from the Natural habitat from Belgaum during the month of November and named as Sample G and get authenticated by the Taxonomist of ICMR Belgaum.

All the Pharmacognostic and Phytochemical studies are carried out in PG Laboratory of KLEU'S Shri BMK Ayurveda mahavidyalaya, as per the standard procedures as follows.

Initially all the samples were subjected for Bark macroscopy under which Organoleptic characters like Appearance, size, Shape, colour,

taste, odour etc were noted. Then the all the bark samples are studied under Microscope by taking Transverse sections and different cellular elements were noted and compared with the standard sample. All the barks are powdered for a size for coarse powder and studied macroscopically for organoleptic characters, later all the powder samples were subjected for powder microscopy and different cellular contents were noted and compared with the standards.

Physicochemical studies like Ash value, Acid insoluble ash, Solubility in different solvents like Ethanol, Water, Methanol, Benzene, Chloroform, and Pet Ether were carried for all powder samples. Extraction is done using soxhlet's apparatus using Water and Alcohol as solvent. All the Extracts were subjected for Preliminary Phytochemical screening for Carbohydrates, Proteins, Tannins, Saponins, and Steroids etc

### DISCUSSION AND CONCLUSION:

All the market samples were having the different size, shape, and external surface in sum of the samples were exfoliated and in some intact. Except the Taste and Mild characteristic odour, all the organoleptic characters were found in all the four market samples. In Powder macroscopy and microscopy, also considerable variation is observed among the samples. Physicochemical parameters are also not matching with the standards except sample G. Extractive values also shown difference in solubility of samples in different solvents.

\*Lecturer Dept of PG Studies in Dravyaguna, KLEU'S Shri BMK Ayurveda Mahavidyalaya, Belgaum-03 [Email-doc.nattu@gmail.com](mailto:Email-doc.nattu@gmail.com).

\*\*Professor, Dept of PG Studies in Dravyaguna, KLEU'S Shri BMK Ayurveda Mahavidyalaya, Belgaum-03.

**RESULTS:**

**BARK MICROSCOPY:**

**Table No-1**

	Sample A	Sample B	Sample C	Sample D	Sample G
Secondary Phloem	+	+	+	+	+
Stone cells	+			+	+
Periderm					+
Phelloderm		+	+		+
Medullary rays	+	+	+	+	+
Calcium Oxalate					
Starch					
Parenchyma					
Crystal fibre	+			+	+

**POWDER MACROSCOPY:**

**Table No-2**

	Sample A	Sample B	Sample C	Sample D	Sample G
<b>Appearance</b>	Fibrous	Fibrous	Devoid of fibrous material	Long powder particles	Devoid of fibrous material
<b>Touch</b>	Coarse	Coarse	Coarse	Coarse	Coarse
<b>Colour</b>	Dull brown	Light brown	Light brown	Reddish	Reddish
<b>Taste</b>	Astringent	Astringent	Astringent	Astringent	Astringent
<b>Odour</b>	Mild characteristic odour	Mild characteristic odour	Mild characteristic odour	Mild characteristic odour	Mild characteristic odour

**POWDER MICROSCOPY:**

**Table No-3**

	Sample A	Sample B	Sample C	Sample D	Sample G
<b>Brown masses</b>	+	+	+	+	+
<b>Stone cells</b>	+	+	+	+	+
<b>Phloem fibres</b>	+	+	-	+	+
<b>Calcium oxalate</b>	-	-	-	-	+
<b>Starch</b>			+		+

**BEHAVIOUR OF POWDERED BARKS ON TREATMENT WITH  
CHEMICAL REAGENTS**

**Table No-4**

Reagent	Sample A	Sample B	Sample C	Sample D	Sample G	Standard
Aq Iodine	+	+	+	+	+	Remains Brown
Nitric acid	Black	Dark brown	Dark brown	+	+	Remains Brown
Picric acid	+	+	+	+	+	Remains Brown then turns slowly orange yellow
NaOH	Brown	Purple	+	+	+	Deep chocolate colour

**FLUOROSCEENCE CHARACTERISTICS OF BARK POWDERES UNDER UV  
LIGHT**

**Table No-5**

	Sample A	Sample B	Sample C	Sample D	Sample G	Standard
Powder as such	+	+	+	+	Light green	Green
Powder treated with NaOH in methanol	Violet ++	Violet ++	Violet ++	Violet ++	Violet +++	Violet

**PHYSICO CHEMICAL ANALYSIS**

**Table No-6**

	Sample A	Sample B	Sample C	Sample D	Sample G
Loss on Drying	9.8%	9.94%	10.99%	8.50%	11.39%
Total Ash value	14.24	13.64	14.38	8.89	10.93
Acid insoluble ash	3.49%	3.24%	1.49%	1.69%	0.6%
pH	5.3	5.5	5.4	4.4	4.1
Specific gravity	1.002	1.003	1.004	1.003	1.005

## EXTRACTIVE VALUES

Table No-7

	Sample A	Sample B	Sample C	Sample D	Sample G
<b>Alcohol</b>	9.45%	11.87%	13.76%	12.55%	16.98%
<b>Water</b>	5.92%	9.68%	14.23%	9.83%	15.15%
<b>Pet Ether</b>	3.91%	3.03%	1.99%	1.99%	2.07%
<b>Chloroform</b>	5.88%	6.84%	4.23%	1.83%	2.71%
<b>Benzene</b>	3.59%	3.28%	3.74%	3.48%	3.99%

## PRILIMINARY PHYTOCHEMICAL SCREENING

Table No-8

Test	Alcohol Extract Samples					Aqueous Extract Samples				
	A	B	C	D	G	A	B	C	D	G
Carbohydrates: Benedict's test	+	+	+	+	+	+	+	+	+	+
Pentose Sugars	+	+	+	+	+	+	+	+	+	+
Starch: Tannic acid test	+	+	+	+	+	+	+	+	+	+
Proteins: Precipitation test	+	+	+	+	+	+	+	+	+	+
Test for Steroids: Salkowski reaction	+	+	+	+	+	+	+	+	+	+
Saponins: Foam test	+	+	+	+	+	+	+	+	+	+
Tannins & Phenolic compounds	+	+	+	+	+	+	+	+	+	+

From the above study it is evident that none of the market samples were derived from the Genuine Ashoka (*Saraca Indica* Linn). And it's a clear indication of Adulteration or substitution with the Ashoka bark, but All the Samples were having the Astringent Taste it shows that adulteration is done with some rationality and Ashoka has been adulterated with other similar botanical sources which are having Astringent taste.

Stem bark of *Bauhinia variegata* Linn, *Brownea ariza* Benth, *Ployalthia longifolia* Benth.R.H.f, *Shorea robusta* Gaertn, *Trema orientalis* Blume are known adulterants. Macroscopic and microscopic characters for distinguishing the adulterants have been worked out<sup>9</sup>. Stem bark of *Polyalthia longifolia*

Benth.R.H.f is the most common adulterant of the drug and it is readily distinguished from the genuine material by absence of rough and warty protuberances and easily peeling of outer bark. The inner bark of *P longifolia* Benth.R.H.f is dark brown in contrast with brick red colour of the bark of *Saraca indica* Linn<sup>10</sup>.

**ACKNOWLEDGEMENT:**

The Author is thankful to Dr. B Srinivas Prasad, Principal, KLEU'Shri BMK Ayurveda Mahavidyalaya, and Belgaum for providing the necessary facilities.

Referances:

1. Billore K.V, Yelne M.B, Et.al "Data Base on Medicinal Plants Used in Ayurveda" Vol IV, CCRAS, New Delhi, 2005 Page No 423-432
2. Sharma PC, Yelne MB, Dennis TJ, Database on medicinal plants used in Ayurveda Vol-3, CCRAS New Delhi, 2001 p.76.
3. Vaidya Bapalal "Some Controversial Drugs in Indian Medicine" Chaukambha Orientalia, Varanasi, U.P, 1<sup>st</sup> Edition, Page No.23.
4. Iyer Narayan and M.Kolamal , Pharmacognasy of Ayurvedic drugs, Department of Phargnos, University of Kerala, Trivandrum, 1960, page no 4-7.
5. Gupta A.K, Tandon Neeraj, Sharma Madhu(Ed), Quality Standards of Indian Medicinal plants vol-2, ICMR, New Delhi, 2005. Page no 204.
6. Ghokale SB, "Text book of Pharmacognosy", Ist edition 1979, Jai Publishing House, Jalgaon. Page No-151.
7. Kokate CK, Purohit AP, Ghokale, Pharmacognosy, 23<sup>rd</sup> Edition, Nov-2005, Nirali Parkashana, New Delhi. Page No - 53.
8. Khandelwal K.R "Practical Pharmacognosy" Nirali Prakashana, Pune, 13 th Edition 2005, PP157-158, 143-153.
9. Srivatsava GN, Bagchi GD, Srivatsava AK. Pharmacognosy of Ashoka stems bark and its adulterants. Int J crude drugs Res 1988; 26:65-72.
10. Sarin YK. Illustrated Manual of Herbal Drugs Used in Ayurveda. New Delhi: Council of Scientific and Industrial Research and Indian Council of Medical Research; 1996; p.120-121