

## PHYSICOCHEMICAL AND PHYTOCHEMICAL STUDY OF SAPTAPARNA (*Alstonia Scholaris R.Br*) WITH SPECIAL REFERENCE TO SANGRAH KALA

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### ABSTRACT

Ayurveda has been practiced for thousands of years and herbal drugs have played a vital role in curing diseases throughout history of mankind. So that Good agricultural and collection practices for medicinal plants are only the first step in quality assurance, on which the safety and efficacy of herbal medicinal products directly depend upon and will also play an important role. In ancient period, *Acharya* have also mentioned drug collection period (*Dravyasangrahkala*) for greater potency of drugs. *Saptaparna* (*Alstoniascholaris R.Br.*) is beautiful fast growing plant found throughout India and it is the important medicinal plant mentioned in *Ayurveda*. Any herb has to be standardized before its use for medicinal purposes. Hence the present study is taken up to study the Physicochemical and Phytochemical properties of *Saptaparna* (*Alstoniascholaris R. Br.*) stem bark with special reference to *Sangrahkala*.

**Key words:** *Sangrahkala*, *Saptaparna* (*Alstoniascholaris R. Br.*), Stem bark, Physicochemical, Phytochemical

### INTRODUCTION:

In Ayurveda, there are many herbal drugs that have greater therapeutic value to treat many diseases. In ancient time, *vaidya* themselves used to collect drugs from the places where they grow naturally and process them according to therapeutic requirements. All care was taken by them regarding place, season of collection, age of plant but now a days for marketing purpose collection of plant done in abundant quantity ignoring maturity of plant, collection period of plant part etc. so that the expected results of drug are not achieved up to the mark. WHO has developed a series of technical guidelines relat-

ing to quality control of herbal medicines, this includes WHO guidelines on good agricultural and collection practices (GACP) for medicinal plant<sup>[1]</sup>. In ancient period *Acharya* have also mentioned specific seasons (*Rutu*) for collection of different plant part in which *Twak* (bark) of plant should be collected in *Sharadarutu* specially.<sup>[2,3,4]</sup> The plant *Saptaparna* (*Alstoniascholaris R.Br.*) is most important medicinal plant which has been described in almost all Ayurveda literature and as well as *Nighantus*<sup>[5,6,7,8]</sup>. It is belonging from the family Apocynaceae. *Alstoniascholaris* stem bark is one of the ingredient of Antimalarial drug Ayush-64, prepared by

CCRAS, India which has proved to be quite effective in combating malaria and it was also found effective in clearance of parasitaemia<sup>[9,10]</sup>. The *Saptaparna* (*Alstoniascholaris* R.Br) is *Laghu*, *Snigdha*, *Tikta* and *Kashayarasa*, *Katuvipak* and *Ushnaveeryatmak* drug so that it have *KaphaPittaghna* properties. According to Ayurveda *Saptaparna* bark is commonly used in many ailments such as *Vrana*, *Kushtha*, *Shwas*, *Gulma*, *Jwarc*<sup>[11,12]</sup>.

**AIM OF STUDY:**To study the Physicochemical and Phytochemical properties of *Saptaparna* (*Alstoniascholaris* R.Br.) stem bark collected in *Shadarutus* (Six seasons).  
**MATERIALS AND METHODS:**For research purpose, all samples of *Saptaparna*(*Alstoniascholaris* R.Br.) stem bark were collected in six seasons (*Shadarutu*) on same mature plant at same day and time from pune region and they authenticated by Botanist.

**Preparation of samples:**The stem bark of *Saptaparna* were collected in *Sharadarutu* (octomber), *Hemantrutu* (December), *Shishirarutu* (February), *Vasantrutu*

**OBSERVATIONS AND RESULTS:**

Obs. Value	A-1	A-2	A-3	A-4	A-5	A-6
Moisture content (%)	6.25	7.77	4.49	5.68	4.72	6.10
Total Ash (%)	8.84	7.62	7.97	8.79	9.12	9.60
Acid insoluble ash (%)	2.62	1.34	2.75	2.63	2.61	2.14
Water soluble ash (%)	1.96	1.36	3.35	2.21	1.41	1.80
Watersoluble extractives (%)	11.13	6.52	17.65	17.07	8.64	14.76
Ethanol soluble extractives (%)	4.32	4.08	8.20	13.72	9.06	6.3
Ph value	6.28	5.55	5.95	5.56	5.70	6.01
Swelling index	3.66	5.50	4.1	5.1	6.00	5.55
Foaming index	142.85	250	500	1000	500	333.33

Thin layer chromatography (TLC):

For TLC, all samples were prepared in ethyl alcohol extractives and spots were observed in UV light (366nm), Visible light and in presence of Iodine vapors.

(April), *Grishmarutu* (June), *Varsha*(August) namely and labeled as A-1, A-2, A-3, A-4, A-5, A-6. These samples were dried under shade. After that air dried stem bark Powdered with the help of pulverizer and powder was passed through the sieve. Powdering was done just before starting physical and chemical tests and store in airtight glass bottles.

**Pharmacognostical study:** The Macroscopic and Microscopic study of samples were carried out in Yashawantcollege, Nanded, Maharashtra.

**Physicochemical and Phytochemical analysis:** Physicochemical and Phytochemical study of samples carried out in Govt. Ayurveda and Unani drug testing Laboratory, Nanded, Maharashtra. The Observational values were comparing with standard values of API<sup>[13,14,15]</sup>.

**API values:**

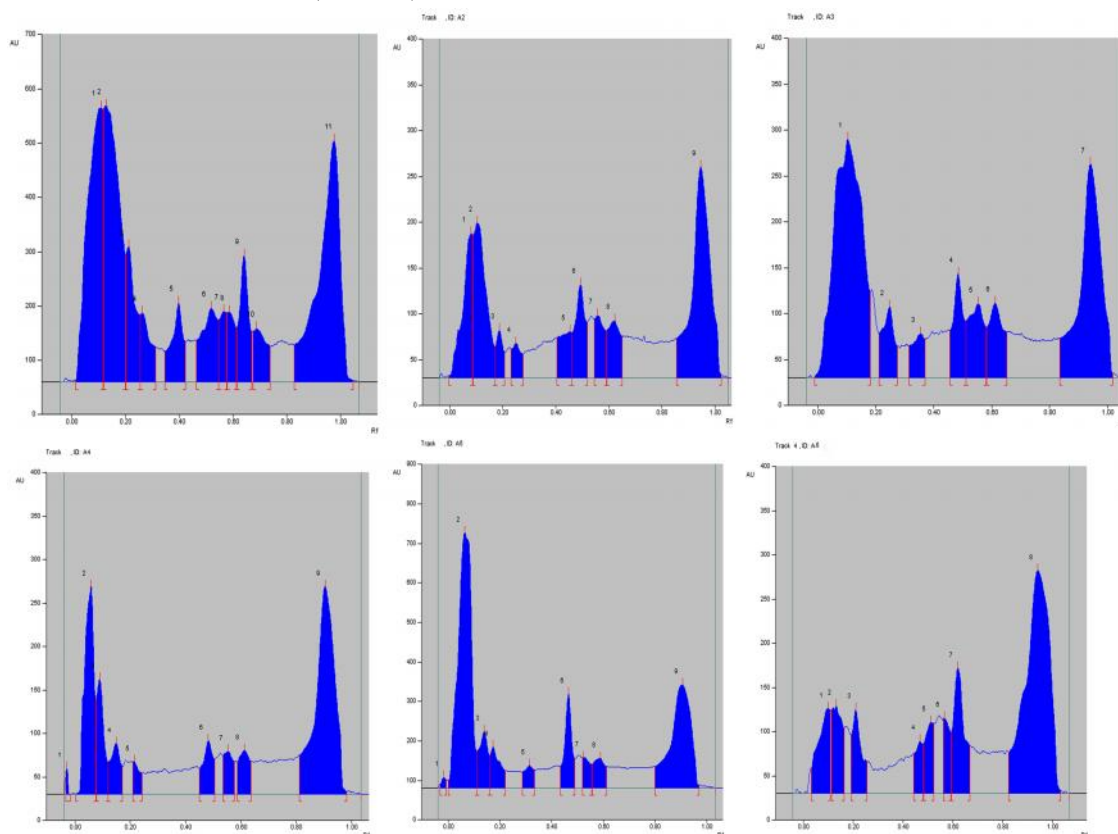
- Foreign matter -not more than 2%,
- Total Ash - not more than 11%,
- Acid insoluble Ash -not more than 3%,
- Alcohol soluble extract- not less than 4%,
- Water soluble extract- not less than 12%

Mobile phase- Toluene: Ethyl acetate: Methanol (8:1:1)

All samples showed the identical spots with slight variations.

High performance thin layer chromatography (HPTLC):HPTLC were carried out in Science college, Nanded, Maharashtra. Samples were prepared in methanol extract and spots observed at wavelength 254nm. Mobile phase-Toluene: Ethyl acetate: Formic acid: Methanol (4:3:2:1)

Samples of *Saptaparna*A-1, A-2, A-3, A-4, A-5, A-6 were collected in six seasons showed spots as 11, 9, 7, 9, 9, 8 namely. Maximum spots (11) observed in sample A-1 which was collected in Sharadarutu.



Phytochemical analysis:

Sr. no.	Test	A-1	A-2	A-3	A-4	A-5	A-6
1	For Tannins a) 5% ferricchloride	+ve	+ve	+ve	+ve	+ve	+ve
	a) Lead acetate	+ve	+ve	+ve	+ve	+ve	+ve
2	Alkaloids:Wagner test	+ve	+ve	+ve	+ve	+ve	+ve
3	Saponine:Foam test	+ve	+ve	+ve	+ve	+ve	+ve
4	Flavonoids:Shinoda test	+ve	+ve	+ve	+ve	+ve	+ve
5	Glycosides:Benedicts reaction	+ve	+ve	+ve	+ve	+ve	+ve

(+ve sign indicates present)

**DISCUSSION:**

- Foreign matters- All samples were self-collected. No impurities were found.
- Ash value- Total Ash usually consists of inorganic radicals. Total

Ash value and Acid insoluble ash value of all samples are within API limit.

3.Extractives value- Sample A-3 showed maximum extractive value in both alcohol

and water as compared to other samples which indicates that more water and alcohol soluble compounds in it.

4. Moisture content- Sample A-2 showed more moisture content value.

5. Ph value- All samples were showed slightly acidic nature.

6. Swelling index- Maximum swelling index value found in sample A-6 which indicates sample may be containing more amount of Mucilage, Pectin.

7. Foaming index- Sample A-4 showed more foaming index than other samples. It suggests sample containing more Saponine.

8. TLC of all samples showed the identical spots with slight variations.

9. HPTLC- After carrying out HPTLC, the sample A-1 collected in *Sharadarutu* showed more spots (11 spots) than other samples which indicates that increase the potency of drug.

### CONCLUSION:

The present study was basic qualitative study and it is carried out on stem bark, whose specific season of collection was mentioned in Ayurveda. This research study providing a scientific basis for *Dravyasangraha kala* and also the developed specific collection technique for Saptaparna. So that the drug is made more potent

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