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AN EXPERIMENTAL STUDY ON ANALGESIC EFFECT OF ASHOKA (SARACA ASOCA) COLLECTED IN DIFFERENT SEASONS

Research article

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ABSTRACT

The observations and the inferences drawn by ancient Acharyas regarding the plant material, appear very rational on the background of recently accumulated knowledge about the variation in phyto-chemical contents of plants, which is known to occur depending on place and time of collection. The study aims at analgesic effect of *Ashoka* bark collected during different seasons. For the present study, *Ashoka* bark was collected in different season from Alvas herbal garden, Moodbidri is used for analysis. Analgesic effect of *Ashoka* bark was done to screen for its Analgesic activity. From the observation it is found that Analgesic activity by Eddy's hot plate method shows the time taken to tolerate the pain sensation is markedly increased in *Sharat*, *Vasanta* and *Greeshma rutu's*. It is observed that the trial drug *Ashoka* bark in the given dose shows moderate therapeutic action as Analgesic

Key words: *Ashoka*, Bark, Analgesic, *Greeshma*, *Vasanta.*

INTRODUCTION: Ayurveda is the science of life practiced by ancient Aryan's which is based on Atharva-Veda, one of the oldest scriptures of Hindus'. The system of Ayurveda embraces within its fold the drugs of plant, animal and mineral origin, both single drugs and compounded formulations.

Applicability, richness of quality, abundance and utility in multipurpose are said to be the best qualities of a drug. There are instructions about which parts of the plants are to be used, whether it should be fresh or dry and what should be the time of collection. It is stressed that the pharmacognostic knowledge (Naamarupa Vijnana) is essential, along with knowledge of physico-chemical properties and effects of drugs.

The observations and the inferences drawn by ancient scientists, regarding the plant material, appear very rational on the background of recently accumulated knowledge about the variation in phytochemical content of plants,[1] which is known to occur depending on place and time of collection.

The drug or plant shows its effect properly when it is collected in prescribed time. it is said that collection of part of plant / drugs in specific season show good efficacy. Selection of appropriate raw drug is an essential aspect to have an effective medicament.

Ayurvedic Literature elaborates six *Rutus* or seasons in a year, which is similar to the *Hindu* Calender3 and collection of the drug has to be done in the six *Rutus* according to the officinal part. Different seasons have been suggested to gather different parts as follows,.

In *Charak Samhita* and *Sushrut Samhita* collection of fruits and flowers is as per its season of flowering and fruiting respectively. Leaves and branches are to be collected in *Vasant* or *Varsha Rutu*

according to *Charaka* and in *Varsha Rutu* according to *Sushruta*. [2,3]

Roots are to be collected in either *Greeshma* or in *Shishir rutu* according to *Charaka* and in *Pravrut Rutu* according to *Sushruta*. Rhizome/Tuber,latex, and Bark is to be collected in *Sharad Rutu* according to Charak Samhita. As per *Sushruta* samhita Latex i.e *Ksheer* is to be collected in *Hemant Rutu.* Heart wood is to be collected in *Hemant Rutu* as per *Charak Samhita* and in *Vasant* as per *Sushrut Samhita*.

Acharya Sushruta and Acharya Charaka explained method and time of collection of barks in *Sharat rutu*. In the present era, Pharma industries give least importance of SOP (standard operating procedure) because of cost effective, easily availability in local market.

Ashoka is one of the sacred trees of Hindus and Buddish. As the name signifies the tree is believed to be 'Capable of reducing the sorrows of people'. It is considered as a symbol of love and is dedicated to *kama*. The Indian god of love. Its scientific name is *Saraca asoka* and belongs to Family – Leguminaceae. It is medium size tree and native of India, Srilanka and other Asian countries.

Ashoka has Astringent and Bitter taste, *Laghu*, *Rooksha* properties, Pungent by its *vipaka*, cold by its potency and suppresses *Kapha pitta.* It has Bodily functions like viz Absorbant, Colour promoting, Vermicidal, Antidotal, Antihaemorrhagic, Cardiotonic,**Analgesic** etc.[5] Bark contains Tannins and catechol. Phenoliz glycoside has been found to vary depending upon the place time of and collection storage condition. It contains helmato xylem and also iron and other substances ferrous compounds. Sterols and organs calcium compound are also present in the drug

AIMS AND OBJECTIVE OF STUDY

To Evaluate the Analgesic effect of *Ashoka* Bark experimentaly which is collected in different seasons.

Research centre

Pharmacological activity of the drug was conducted at Alva's Ayurveda Medical College, Animal house, Moodbidri.

METHODOLOGY

Collection of plant parts was done from *Ashoka* (Bark) was collected from Alva's Herbal Garden Shobhavana Moodbidri.

Botanical authentication was done at ICMR-National Institute of Traditional Medicine, Belgaum with the help of renowned Scientist Dr.Harsha Hegde.

Powder preparation was done by mortar and pestle after proper drying of both Bark (*Ashoka*).

Phytochemical analysis was carried out at S.D.M Research Center, Udupi4 and Pharmacological activity of the drug was conducted at Alva's Ayurveda Medical College, Animal house, Moodbidri.

The sample is collected in the mid of each season ie *Shishira* (Jan,Feb15-16,Mar), *Vasanta* (Mar,Apr15-16,May), *Greeshma* (May,Jun15-16,Jul), *Varsha* (Jul,Aug15-16,Sep), *Sharat* (Sep, Oct15-16,Nov), *Hemant*a (Nov,Dec15-16,Jan).

Institutional Animal Ethical Committee permission for conducting animal experiment taken with reference no AAMC/CPCSEA/IAEC 2015-16 AL-02. At Alvas Ayurvedic Medical College Moodbidri. Statistical methods used for analysis are One way ANOVA test and Dependent "t" test.

ANALGESIC STUDY

Evaluation of Analgesic activity in albino rats by Eddy's hot plate method. [6]

a) ANIMALS:

Wister rats weighing about 150-250gms under controlled standard condition{23 ±1°c,55±10% humidity and a 12hrs light/dark cycle}provided with food and water selected from animal house attached to Alva's Ayurveda Medical College Moodbidri.

b) The animals were divided into Three groups, each group contains six rats (for each season).

- Group 1. - Normal water
- Group 2. - Combiflam solution
- Group 3. - *Ashoka* bark decoction with different seasons.

c) A transparent glass cylinder is used to keep the animal on the heated surface of the plate.

The temperature of the hot plate is set using a thermo regulated water-circulated pump.

The time of latency is defined as the time period between the zero point, when the animal is placed on the hot plate surface, and the time when the animal licks its paw or jumps off to avoid thermal pain.

In vehicle or treated rats, calculate percent increase in reaction time at each time interval of 30,60,120,180 minutes respectively.

Materials used:

- *Ashoka* bark decoction
- Combiflam contains (Ibuprofen 400 mg and paracetamol 325mg) (SANOFI Pharma)solution

Instruments used:

- Eddy's hot plate
- Weighing balance
- Glass beakers
- Syringes

Inclusion criteria:

Wister rats weighting about 150 -250gms are selected.

Assessment criteria:

Calculate percent increase in reaction time at each time interval.

Intervention:

Duration of treatment: 18 Days.

Dosage fixation: The dosage of Combiflam(SANOFI Pharma), *Ashoka* bark decoction, will be converted into rat dosage by using standard dose converting table (Paget's Barnes).6

- Dose: Reference drug dose (Combiflam): 200mg/kg body weight

Trial drug dose *Ashoka* bark :550mg/kg body weight

Observation and results ,Analgesic Activity by Hot Plate Method in Rats

Table no:1 Control group Water

Group Control	**Dose**	**0min**	**60min**	**90 min**	**120 min**	**180 min**
1		3	3	3	4	4
2		3	3	4	4	4
3		3	3	4	4	4
4		3	4	4	4	4
5		4	4	4	5	5
6		3	3	3	4	5

Table number 1 control group consisting of six rats treated with no medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 3 to 4 seconds at the time interval of 60min,90min and 180min.

Table no: 2 Reference group Standard drug Combiflam

Group Ref Std	Dose	0min	60min	90 min	120 min	180 min
1	200mg	3	6	7	8	10
2	200mg	4	6	8	8	11
3	200mg	3	7	8	9	10
4	200mg	4	7	8	9	11
5	200mg	3	6	7	8	10
6	200mg	3	6	6	7	10

Table number 2 Standard drug group consisting of six rats treated with Combiflam as standard medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 9 to 10 seconds at the time interval of 90min,120min and 180min.

Table no: 3 Trial group 1 (*Ashoka bark in Shishira*)

Group	Dose	0min	60min	90 min	120 min	180 min
1	550mg	3	7	7	7	7
2	550mg	4	8	8	8	9
3	550mg	3	7	8	8	8
4	550mg	4	6	7	7	8
5	550mg	3	7	8	8	8
6	550mg	3	6	7	8	9

Table number 3 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Shishira rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 7 to 9 seconds at the time interval of 90min,120min and 180min.

Table no: 4 Trial group 2(*Ashoka bark in Vasanta*)

Group	Dose	0min	60min	90 min	120 min	180 min
1	550mg	3	7	7	8	8
2	550mg	4	8	8	9	9
3	550mg	3	7	8	8	8
4	550mg	4	7	8	9	9
5	550mg	3	7	8	8	8
6	550mg	3	6	7	7	8

Table number 4 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Vasanta rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 7 to 9 seconds at the time interval of 90min,120min and 180min.

Table no: 5 Trial group 3 (*Ashoka bark in Greeshma*)

Group	Dose	0min	60min	90 min	120 min	180 min
1	550mg	3	7	8	8	8
2	550mg	4	7	8	8	9
3	550mg	3	7	8	8	8
4	550mg	4	8	9	9	9

5	550mg	3	7	8	8	9
6	550mg	3	6	7	8	9

Table number 5 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Greeshma rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 8 to 9 seconds at the time interval of 90min,120min and 180min.

Table no: 6 Trial group 4 (*Ashoka bark in Varsha*)

Group	**Dose**	**0min**	**60min**	**90 min**	**120 min**	**180 min**
1	550mg	3	6	7	7	8
2	550mg	4	7	8	8	9
3	550mg	3	7	8	8	8
4	550mg	4	7	9	9	9
5	550mg	3	7	8	8	9
6	550mg	3	6	7	8	8

Table number 6 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Varsha rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 7 to 9 seconds at the time interval of 90min,120min and 180min.

Table no: 7 Trial group 5 (*Ashoka bark in Sharat*)

Group	**Dose**	**0min**	**60min**	**90 min**	**120 min**	**180 min**
1	550mg	3	5	8	8	9
2	550mg	4	6	7	9	10
3	550mg	3	7	8	9	9
4	550mg	4	6	7	9	9
5	550mg	3	7	8	8	9
6	550mg	3	6	8	9	9

Table number 7 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Sharat rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 8 to 10 seconds at the time interval of 90min,120min and 180min.

Table no: 8 Trial group 6 (*Ashoka bark in Hemant*)

Group Control	**Dose**	**0min**	**60min**	**90 min**	**120 min**	**180 min**
1	550mg	3	5	6	7	8
2	550mg	4	6	7	8	8
3	550mg	3	6	7	7	8
4	550mg	4	6	8	8	8
5	550mg	3	5	6	7	7
6	550mg	3	6	7	7	8

Table number 8 Trial drug group consisting of six rats treated with *Ashoka* Bark decoction(Collected in *Hemant rutu*) as trial medicine after subjected to hot plate the heat tolerating capacity of rats shows average of 6 to 8 seconds at the

time interval of 90min,120min and 180min.

OBSERVATION: *Ashoka* bark is having moderate analgesic activity as compared to standard drug. From the experimental data, it is observed that better result was seen in *Sharat rutu* with *Ashoka* bark decoction.

DISCUSSION: In Ayurvedic treatises, drug collection has been described in four major steps ie *Bhumi pariksha* (Selection of land), *Sangrahaniyadravya* (Selection of drug), *Sangrahaniyavidhi* (Method of collection), and *Sangrahaniya kala* (Time of collection) to procure best qualities of drug the proper place of collection, part, method and time for collection are very much important. While collecting the drug factors such as *Guna*(qualities), Desha(place), Kala(time), *Pakva-Apakvaavastha*(ripened or unripened) , *Navapuranaavastha*(fresh or old), *Prayojyaanga*(part used), Karma(action) and *Disha*(direction) needs to be given importance.3

To attain a good requisite therapeutic result, it is mandatory to collect the drug bestowed with optimum Rasa *Veeryadi*(taste and potency etc) qualities bestowed drug.

Drug *Ashoka* is small to medium sized evergreen tree, popularly explained in Ayurvedic literature for its therapeutic uses like *Pradara*(Menorhagia), *Vedasthanpana*(Analgesic) and *Gulma*(Tumor). The scientific name of *Ashoka* is *Saraca asoca.* roxb and have some controversy with *Polylathia longifolia* drug, because of its local name as *Ashoka.* It has more than 37 different synonyms like Tamra pallava(Coppery red tender leaves), *Shokanasha*(Relieves from sadness), Vishoka(removes sadness), *Streepriya*(Liked by womens), etc. The stem bark is main useful part. The major chemical constituents are tannin like catachin and epicatachin.5

Analgesic activity by Eddy's hot plate method shows the time taken to tolerate the pain sensation is markedly increased in *Sharat*, with the readings of average 9 to 10 min pain sustaining capacity at the time interval of 120 and 180 min when compare to other *Rutu*s where as in other *Rutus* like *Vasanta* and *Greeshma Rutu's good tollarating capacity observed* at the level of 120min and 180 min after administration of trial drug. It is observed that the trial drug *Ashoka* bark in the given dose moderately acts as Analgesic.

CONCLUSION

Charaka in *Vimanasthana* summarizes technical excellence in the field of pharmacognostic, pharmaceutical and pharmatherapeutical sciences as "*Tasyaapeeyam Pareekshaa Idamevamprakriti Evamguna Evamprabhava Asmindeshejaatam Asminrutam Evamgruhitam Evamnihitam."3* etc. It means *Dravya pareeksha* is done on the basis of its *Prakruti*,its *guna*, its *prabhava* and where it grown and in which season it is grown all should be considered Here "*Evamrutu*" means that the season for collection of drugs this point was considered for the present study which plays an important role in the field of drug research as well its possible implication in therapeutic effect of a drug.To accomplish a good therapeutic result, it is mandatory to collect the drug which is bestowed with optimum *Rasa viryadi* qualities.

Analgesic activity by Eddy's hot plate method shows the time taken to tolerate the pain sensation is markedly increased in *Sharat*,*Vasanta* and *Greeshmarutu's*. It is

observed that the trial drug *Ashoka* bark in the given dose shows moderate therapeutic action as Anti-inflammatory and Analgesic in the present study. In Vedic and Ayurvedic literature, the drug collection has been recommended for different parts of the plant in different seasons, asterisms (*Nakshatra*),on the basis of *Virya* and therapeutic uses. The climate, temperature, rainfall, duration of day light, altitude, method of cultivation, effect of lunar cycle, collection from wild area, soil condition and method of collection, processing and storage also will have its impact on the secondary metabolites of the plant which ultimately effects the therapeutic efficiency of the drug.

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