

# Determination of Ash Values of Two Endangered Medicinal Taxa of Marathwada Region

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## Abstract

The seasonal variation of total ash, acid soluble ash and acid insoluble ash have been investigated in leaves, stem and bark, of *Madhuca indica* and *Butea monosperma* which are medicinally important taxa in Marathwada region. Comparative account of total ash content of stem of *Butea monosperma* showed high level (range 14.65 % to 16.5 %) than total ash content of stem of *Madhuca indica* (range 7.3 % to 8.6 %). Acid soluble ash content of leaves of *Madhuca indica* showed lower (range 6.5 % to 8.5 %) and higher in stem of *Madhuca indica* (range 11.3 % to 12.35 %) compare to other parts. Acid insoluble ash of bark of *Madhuca indica* (range 3.9 % to 5.45 %) showed high level and lower in bark of *Butea monosperma* (range 1.85 % to 2 %).

## 1. Introduction

Medicinal plants have been used as traditional treatments for numerous human diseases for thousands of years. Medicinal plants continue to be an important therapeutic aid for alleviating the ailments of humankind. The search for eternal health and longevity and for remedies to relieve pain and discomfort drove early man to explore his immediate natural surroundings and led to the use of many plants, animal products, and minerals, etc. and the development of a variety of therapeutic agents. Today, there is a renewed interest in traditional medicine and an increasing demand for more drugs from plant sources. This revival of interest in plant-derived drugs is mainly due to the current widespread belief that “green medicine” is safe and more dependable than the costly synthetic drugs, many of which have adverse side effects. Nature has bestowed upon us a very rich botanical wealth and a large number of diverse types of plants grow wild in different parts of our country. In India, the use of different parts of several medicinal plants to cure specific ailments has been in vogue from ancient times.

Ash values were determined with a purpose to find out the total amount of inorganic solutes present in the medicinal plant materials. Quite a few herbal therapies make use of ash. It is very obvious that ash of any plant does not contain any organic material and therefore, inorganic salts are used medicinally. It is also interesting to know about the differential solubility of the components of ash. Therefore, the solubility of ash in hydrochloric acid was tested in the present study.

*Butea monosperma* (Lam.) is an indispensable tree. The plant is used in Ayurvedic, Unani and Siddha medicine for various ailments (Joshi, 2000). Almost

all the parts of the plant namely root, leaves, fruit, stem bark, flowers, gum young branches are used as medicine, food, fibre and for other miscellaneous purposes such as fish poison, dye, fodder, utensils, etc. (Komboj, 2000). About 45 medicinal uses are associated with the plant and out of these claims almost half the number of claims have been scientifically studied and reported. These observations are noteworthy for further studies on modern scientific lines. (Burlia and Khade, (2007).

*Madhuca indica* (mahua) has been the single largest indigenous source of natural hard fat in soap manufacture. Seed Oil is used as ointment, in rheumatism and to prevent crack in the skin in winter. It is used for edible purposes culinary, hair oil, illumination, lighting, keeps body glossy and warm. The present of toxic and bitter saponins in mahua cake/meal precludes its utilization in poultry/animal feeds. The flowers are used as vegetable, for making cake, liquor; flower juice is used in the treatment of enlargement of axillary gland, neurotic disorder and taken with cow's milk as an aphrodisiac, in cough and bronchitis (Jain, 1996). The derived liquor desired from the fermentation of flowers is considered to be a tonic and nutritive. Seed paste is applied to cure muscle fatigue and relieve pain in the muscle and joints to improve the texture and vigour of skin (Kirtikar and Basu 1980). Bark decoction is used in curing bleeding gums and ulcers. Oil washing soaps. Refined oil cooking. Confectionary, lubricating, Bathing oil, greases, candles, Fatty alcohols, stearic acid, skin disease, laxatives, hemorrhoids. □ Possesses insecticidal and pesticidal properties. It is good laxative in habitual constipation, piles, and hemorrhoids. □ It is used for lawns and golf greens

as a wormicide for which the cake has export value. Used the oil cake of *Madhuca* sp., as fertilizer and found that it is moderately immobilize an attempt is made to investigate the occurrence and seasonal variation of ash values in two (*Madhuca indica* and *Butea monosperma*) endangered medicinal taxa of Marathwada

**2. Materials and Methods**

**Determination of ash values**

Methods recommended in British Pharmacopoeia (Anonymous, 1973; Ahmad and Sharma, 2001) were followed for determining ash value.

**Preparation of Ash**

3 gm of drug was incinerated in a Silica crucible over the burner. The charred material was heated in muffle furnace for six hours at 600-650°C. The ash formed was white and free from carbon. It was cooled and weighed on the ash less filter paper.

**Determination of Water –soluble Ash**

The ash was boiled for 5 minutes with 25ml of distilled water. Insoluble matter was collected in a crucible or ash less filter paper and washed with hot water, ignited and weighed. Weight of the insoluble matter was subtracted from the weight of ash. The difference in weight represents the water soluble ash. Percentage of water soluble ash was calculated with reference to the air dried drug.

**3. Results and Discussion**

*Madhuca indica* Gmel –

Total ash content in leaves it ranges from 6.1% to 8.1% highest being observed in winter 8.1% than monsoon 7.15% and summer 6.1%.The bark had higher totals ash content at winter 16.65% as compared to monsoon 16.45 and summer 13.85. In stem total ash content higher at 16.25% than summer 14.61% and winter 12.5%.The percentage of total ash were found to be in the increasing order of leaves< stem, bark.

The water solubility of ash in leaves ranges from 2.6% to 4%. Monsoon (4%) show high ash solubility in water as compared to winter 2.8% and summer 2.6% respectively.

Water solubility of ash content of bark was ranging from 6.3% to 6.65%. highest being observed at winter 6.65% as compared to summer 6.55% and monsoon 6.3%. In stem summer show water solubility of ash at high level 4.9% as compared to monsoon 3.6% and winter 2.55%.

The percentage of water solubility of ash were found to be in the increasing order of leaves< stem< bark. (Table1).

The water insolubility of ash in leaves show higher level in winter 5.85% as compared to summer 3.55% and monsoon 3.15%.

The bark water insolubility of ash ranges from 7.25% to 10.1%. Higher insolubility observed at monsoon 10.1% than winter 10%and summer 7.25%

The stem show highest water insolubility of ash as compared to bark and leaves it ranges from 9.7% to 12.65% .Higher insolubility observed in monsoon 12.65% than 9.95and summer 9.7%

The percentage of water insolubility of ash is increasing order of leaves< bark< stem. (Table 1 and Graph 1)

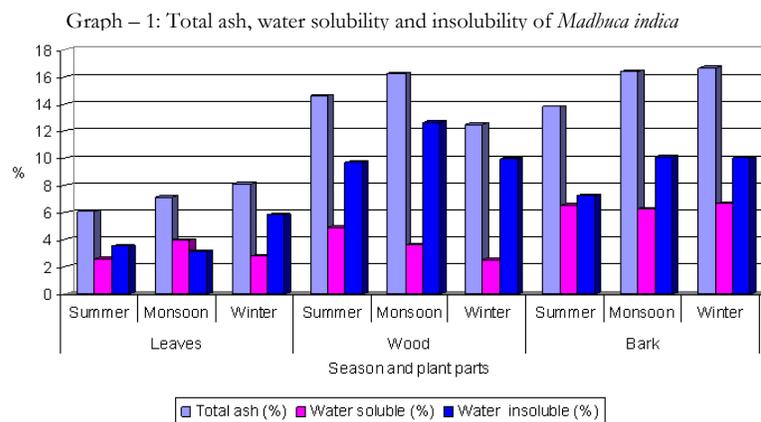


Table.1: Determination of Ash Values of different plant parts of *Madhuca indica*

Plant parts	Season	Total Ash (%)			Water soluble (%)			Water insoluble (%)		
		1 year	2year	Mean	1 year	2year	mean	1 year	2year	Mean
Leaves	Summer	6.2	6	6.1	2.8	2.4	2.6	3.5	3.6	3.55
	Monsoon	7.2	7.1	7.15	4.3	3.7	4	2.9	3.4	3.15
	Winter	7.9	8.3	8.1	3.3	2.3	2.8	5.7	6	5.85
Wood	Summer	13.6	15.6	14.6	4.4	5.4	4.9	9.2	10.2	9.7
	Monsoon	16.2	16.3	16.25	3.4	3.8	3.6	12.8	12.5	12.65
	Winter	12.4	12.6	12.5	2.5	2.6	2.55	9.9	10	9.95
Bark	Summer	13	14.6	13.8	6.4	6.7	6.55	6.6	7.9	7.25
	Monsoon	16.5	16.3	16.4	6.3	6.3	6.3	10.2	10	10.1
	Winter	17.3	16	16.65	6.3	7	6.65	11	9	10

***Butea monosperma* Lam-**

The total ash content of leaves ranges from 13.35% to 14.45%. Higher level during summer (14.45%), than winter (13.95%) and monsoon (13.3%). The total ash content of bark was higher level at summer (17.6%) than monsoon (15.3%) and winter (14.15%). The total ash content of stem was higher level at monsoon (8.15%) than summer (8.3%) and winter (8%) respectively. The percentage of total ash found to be in the increasing order stem<leaves< bark

The range of water soluble ash content of leaves was ranging from 3.4% to 3.7% highest solubility observed at winter 3.7%. Than summer 3.65% than monsoon 3.4%.

Bark showed higher level of water soluble ash at monsoon 4.65% over than summer and winter (4.55%) and wood showed lower level of water soluble ash at both in monsoon and winter 2.7% than summer 2.75%.

The percentage of ash solubility in water to be increasing order as stem< leaves< bark.

The range of water insolubility ash content is highest them bark and wood it ranges from 9.9% to 10.25% , winter shows higher (10.25%) as compared to summer(10.8%) and monsoon(9.9%) In bark show higher level of water insolubility at summer 13.05% than monsoon 10.65% and winter 9.6%.

The percentage of water insolubility to be in the increasing order of stem< leaves< bark. (Table-2and-Graph.2)

Graph -2: Total ash, water solubility and insolubility of *Butea monosperma*

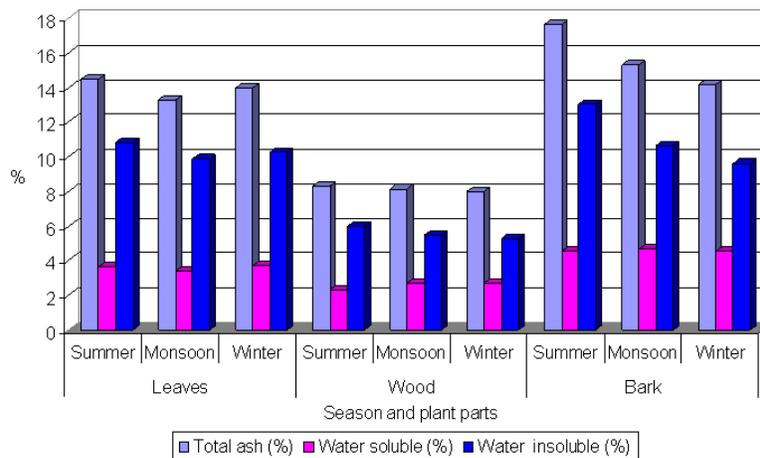


Table.2: Determination of Ash Values of different plant parts of *Butea monosperma*

Plant parts	Season	Total Ash (%)			Water soluble (%)			Water insoluble (%)		
		1 year	2year	Mean	1 year	2year	mean	1 year	2year	Mean
Leaves	Summer	14.6	14.3	14.45	3.6	3.7	3.65	11	10.6	10.8
	Monsoon	13	13.6	13.3	3.2	3.6	3.4	9.8	10	9.9
	Winter	14.6	13.3	13.95	3.7	3.7	3.7	10.9	9.6	10.25
Wood	Summer	8.3	8.3	8.3	2.3	2.4	2.35	6	5.9	5.95
	Monsoon	8	8.3	8.15	2.6	2.8	2.7	5.4	5.5	5.45
	Winter	8	8	8	2.7	2.7	2.7	5.3	5.3	5.3
Bark	Summer	16.6	18.6	17.6	4.3	4.8	4.55	12.3	13.8	13.05
	Monsoon	15.6	15	15.3	4.6	4.7	4.65	11	10.3	10.65
	Winter	14	14.3	14.15	4.4	4.7	4.55	9.6	9.6	9.6

## References

- Ahmad, R.V. and Sharma, R.K., 2001. Evaluation of drug for standardization. Proceedings of WHO trainingcum-workshop, Pharmaceutical lab for Indian medicine, Ministry of health and family welfare, Govt. of India, Ghaziabad.
- Anonymous. 1973: British Pharmacopocia. By Her Majesty's stationary office, London, U.K
- D. A. Burlia and A. B. Khade Phcog Rev. 2007. Plant Review. A Comprehensive review on *Butea monosperma* (Lam.) Kuntze Pharmacognosy Reviews 1, Issue 2, Jul-Dec.
- Jain, S.K, 1996. Medicinal plants. National Book Trust, New Delhi, India
- Joshi S.G. 2000. *Medicinal plant*. Calcutta: Oxford and IBH Publishing Co. Pvt. Ltd., p. 188-401
- Kamboj V. P. 2000. Herbal medicine. *Curr Sci*, 78: 35-9.
- Kirtikar, KR and Basu, B.D., 1980. Indian Medicinal Plants, Vol. 1-4. Bishen Singh Mahendra Pal Singh, Debra Dun.