



# International Journal of Medicine and Pharmaceutical Research

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## RESEARCH ARTICLE

### Determination of seasonal variation of ash values of *Sennatoria* Linn.

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#### ABSTRACT

The seasonal variation of acid insoluble ash, acid soluble ash, water insoluble ash and water soluble ash content have been investigated from leaves, stem and root of *Sennatoria*. Comparative account of acid insoluble ash contents of *Sennatoria* showed higher level in stem (10.33 %) during summer season and lowest in root (1.34%) during monsoon season. Comparative account of water insoluble ash contents of *Sennatoria* showed higher level in leaves (range 9.66 to 10.66 %) than stem (range 8.00 to 9.33 % and root (range 2.33 to 3.33 %).

**Keywords:** Acid insoluble ash, acid soluble ash, water insoluble ash, water soluble ash and *Sennatoria*.

#### ARTICLE INFO

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### 1. Introduction

Plants are the richest resource of drugs. Traditional systems of medicine, modern medicines, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates and chemical entities for synthetic drugs are directly or indirectly dependent on plants (Hammer et.al, 1999). Plants are an important part of our everyday diet, their constituents and nutritional value has been intensively studied for decades. In addition to essential primary metabolites (e.g., carbohydrate, lipid, protein and amino acids), higher plants are also able to synthesize a wide variety of low molecular weight compounds, the secondary metabolites (Kadam et. al. 2013; Kadam et. al., 2016). Beyond this pharmaceutical

approach to plants, there is a wide tendency to utilize herbal product to supplement the diet, mainly with the intention of improving the quality of life and preventing the diseases (Maffei M., 2003). Despite the remarkable progress in the preparation of synthetic drugs, over 25% of prescribed medicines in industrialized countries are derived directly from plants (Newman et.al, 2000). This plant is popularly known as Foetid *Cassia Tora*, Sickle Senna, Wild Senna, Sickle Pod, Coffee Pod, Tovara, Chakvad and Ringworm Plant (Nadkarni, 2009). *Cassia tora* Linn is one of the wild herbs which is well known for its medicinal attributes. Various bioactive compounds present in stem, roots, seeds,

leaves and pods of particular plant. *Sennator* has shown tremendous applications in both traditional and modern medical practices. The leaves and seeds are of use in cardiac disorders, dyspepsia, leprosy, ringworm, colic, constipation, flatulence, cough and bronchitis. Pods are used in dysentery as well as to treat eye diseases. Root is known to be bitter, tonic, stomachic and is antidote against snake bite (Hemadri and Rao, 1984). In Andhra Pradesh, the tribal people had been using the leaves of this plant grounded along with peppers and water into a paste, for the treatment of Jaundice (Dastur, 1962).

The leaves are alterative, aperient, antiperiodic and given to children suffering from intestinal disorders. The leaves, roots, and even the whole plant are engaged in cure of ulcers, helmentiasis, impetigo and as a purgative (Kadam, 2009; Tambe and Kadam, 2010). The pounded leaves are useful as poultice on cuts and wounds similar to tincture-iodine and for ulcers to hasten suppuration (Wallis, 1967). The antioxidant properties of *Sennator* leaves is reported by (Gupta et al, 2012). The in vitro anthelmintic activity of *Sennator* was reported by (Kawade and Manisha, 2013). The antifungal activity of leaf extract was reported by (Mukherjee et al, 1996). The antiarthritic activity of *Sennator* plant parts was reported by (Balekar et al, 2013). The antidiabetic activity of *Sennator* leaf was reported by (Chaurasia et al, 2011. Rejiya et al, 2009). Anticancer properties of *Sennator* leaves have reported by (Chaurasia et al, 2011. Rejiya et al, 2009).

## 2. Materials and Methods

### 2.1.1 Banana Peel:

Method recommended in Pharmacopoeia of India (Anonymous, 1966), British Pharmacopoeia (Anonymous, 1973) were followed for determining ash value percentage method.

#### Preparation of Ash:

3gm of drug was incinerated in a Silica crucible over the burner. The charred material was heated in muffle furnace for six hours at 60 – 65 °C. The ash was found white and free from carbon. It was cooled and weighed on the ash less filter paper.

#### Determination of Acid-Insoluble Ash:

The acid was boiled for 5 minutes with 25ml of dilute hydrochloric acid. Insoluble matter collected in crucible or on an ash less filter paper and washed with hot water, ignited and weight. Percentage of acid insoluble ash was calculated with reference to the air dried drug.

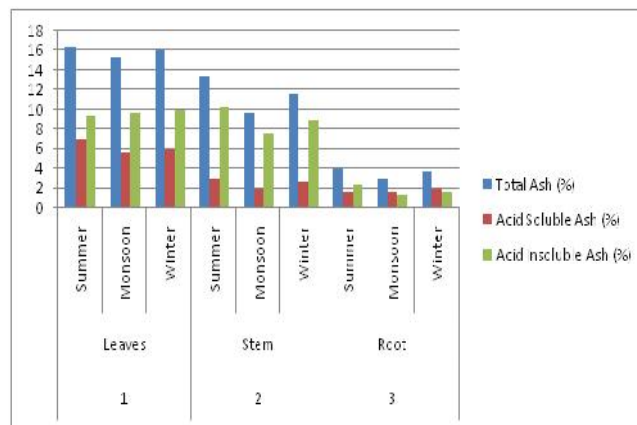
#### Determination of Water-Insoluble Ash:

The water was boiled for 5 minutes with 25 ml of dilute water. Insoluble matter collected in crucible or an 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.

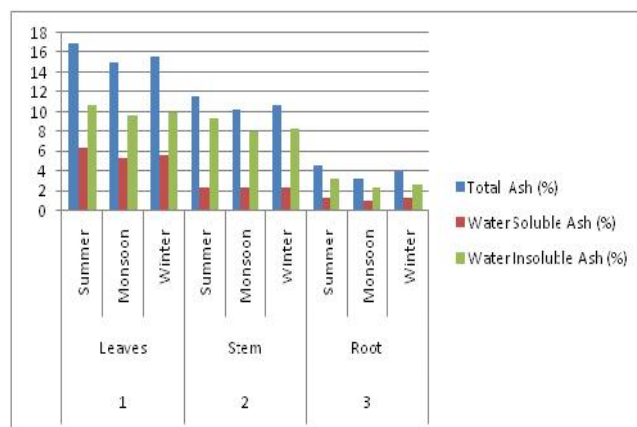
## 3. Results and Discussion

Ash values were determined with a purpose to find out the total amount of inorganic solutes present in the medicinal International Journal of Medicine and Pharmaceutical Research

plant material. 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 different solubility of the components of ash. Therefore, the solubility of ash in water and hydrochloric acid was tested in the present study.



**Graph No. 1:** Determination of acid soluble ash and acid insoluble ash of *Sennator* Linn.



**Graph No.2:** Determination of water insoluble ash and water soluble ash of *Sennator* Linn.

#### Determination of acid insoluble ash:

The total ash of leaves of *Sennator* were ranges from 15.33 % to 16.33 %, higher level of total ash was found in summer season ( 16.33 %) than winter (16 %) and monsoon (15.33 %). Total ash of stem showed highest level in summer season (13.33 %) as compared to winter (11.66 %) and monsoon (9.66 %). Total ash of root showed highest level in summer season (4 %), than winter (3.66 %) and monsoon (3 %). The percentage of total ash were found to be in the increasing order of leaves < root < stem (Table No. 1 and Graph No. 1)

The range of acid soluble ash content of leaves of the said plant was ranging from 5.66 % to 7 % among different seasons tested. Stem showed lowest level of acid solubility of ash content than leaves (i.e. 2 % to 3 %) compare to leaves and root. Highest level was recorded in summer season (3 %), than winter (2.66 %) and monsoon (2 %).

Root showed higher level of ash soluble in acid at summer season (1.66 %), than winter season (2 %) and monsoon (1.66%) The percentage of acid solubility of ash were found to be in the increasing order of the leaves < root < stem (Table No. 1 and Graph No.1).

Acid insolubility of ash of leaves of *Sennatorra* was highest in season winter (10 %) as compared to monsoon (9.67 %) and summer (9.33 %). The range of percentage of acid insoluble ash of stem showed the range of (7.66 % to 10.33 %). Root showed in the range of (1.34 % to 2.33 %). In root, acid insolubility of ash showed higher level in summer season (2.33 %) than monsoon (1.34 %) and winter (1.66 %). The percentage of acid insoluble ash content were found to be in the increasing order of leaves < stem < root (Table No.1 and Graph No.1).

#### Determination of water insoluble ash:

The total ash content of leaves ranges from 15 % to 17 %. Higher level during summer (17 %), than Monsoon (15 %) and winter (15.66 %).The total ash content of stem was higher level at summer (11.66 %) than winter (10.66 %) and monsoon (10.33 %). The total ash content of root was

higher level noted at summer (4.66 %) than monsoon (3.33 %) and winter (4 %) respectively. The percentage of total ash found to be in the increasing order root < stem < leaves (Table No.2 and Graph No.2 The range of water soluble ash content of leaves was ranging from 5.34 % to 6.34 %, highest solubility observed at summer 6.34 % than monsoon 5.34 % and winter 5.66 %. Stem showed higher level of water soluble ash at summer (2.33 %) over than winter (2.33 %) and monsoon (2.33 %). Root showed high water soluble ash at summer (1.33 %) than in monsoon (1 %) and winter (1.33 %). The percentage of ash solubility in water to be increasing order as root < stem < leaves (Table No.2 and Graph No.2).

The range of water insolubility ash content is in leaves 9.66 % to 10.66 %. In stem winter shows higher water insoluble ash content in summer (9.33 %) as compared to monsoon (8 %) and winter (8.33 %). In root show higher level of water insolubility at summer (3.33 %) than winter (2.67 %) and monsoon (2.33 % ).The percentage of water insolubility to be in the increasing order of root <stem < leaves (Table No.2 and Graph No.2 ).

**Table .No 1:** Determination of acid soluble ash and acid insoluble ash of *Sennatorra* Linn.

S.No.	Plant Part	Season	Total Ash (%)	Acid Soluble Ash (%)	Acid Insoluble Ash (%)
1	Leaves	Summer	16.33	7.00	9.33
		Monsoon	15.33	5.66	9.67
		Winter	16.00	6.00	10.00
2	Stem	Summer	13.33	3.00	10.33
		Monsoon	9.66	2.00	7.66
		Winter	11.66	2.66	9.00
3	Root	Summer	4.00	1.66	2.33
		Monsoon	3.00	1.66	1.34
		Winter	3.66	2.00	1.66

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