

NOTE

**Physico-chemical Parameters of Parthenium in Nagercoil,
Tamil Nadu, India**

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Parthenium possesses harmful and useful properties. The samples of leaves and flowers were collected during September and February from the different locations of Nagercoil, Tamil Nadu. Physico-chemical parameters, viz., percentage of moisture, ash content, solubility in cold and hot water, NaOH and HCl were estimated and reported.

Key Words: Physico-chemical parameters, Parthenium.

Parthenium hysterophorus L. is the most unwanted weed in the Indian subcontinent. Parthenium is commonly known as congress weed, carrot weed, false rag weed, etc.¹ It has been studied that Parthenium flowers emit millions of pollens which are responsible for causing asthma, bronchitis, dermatitis, high fever, skin diseases and mental depression in human beings. The small hair present on the stem of Parthenium when come in contact with human beings and animals cause different types of lethal skin diseases. The roots of Parthenium weed secrete many lethal chemicals harmful to other plants present in their vicinity. These chemicals are responsible for the fast spread of this weed^{2,3}.

It is a short lived ephemeral herb. Parthenium weed is an annual plant with a deep tap root and an erect main stem. The weed usually grows to a height of 1–1.5 m although it can grow upto 2 m height⁴. It is capable of growing in most soil types but becomes most dominant in alkaline clay loam soils⁵. The decoction of the root is useful to arrest dysentery⁶. Parthenium is used externally for skin disorders and also possesses anti-tumour properties⁷. Decoction of the plant is often taken internally as a remedy for a wide variety of ailments⁸ and its leaf yields an essential oil⁹.

Extensive analysis has not been carried out on parthenium so far due to the fear of its allergic character. The present study involves the chemical analysis of leaves and flowers of some samples of parthenium available in different parts of Nagercoil, Tamil Nadu.

Study Area: The samples were collected from three different locations in Nagercoil: S.T. Hindu College Campus, Vadasery and Haneefa Nagar.

Collection of Samples: The samples of flowers (I) and leaves (II) were collected early morning at 6 a.m. by cutting with scissors. These samples were collected on trace papers in dishes.

Moisture Content: 1 g of each sample (I) and (II) was kept in an oven at 105°C for 2 h. It was weighed and kept in an oven till it showed constant weight. From the weight loss, moisture content was calculated.

Ash Content: 1 g of each dried sample (I) and (II) was taken in different silica crucibles and heated over a Bunsen flame, then placed in a desiccator and weighed.

Cold Water Solubility: 1 g each of the dried samples (I) and (II) was added in 100 mL distilled water for 48 h. It was filtered. The filter paper was washed with distilled water, dried in an oven at 105°C and weighed.

Hot Water Solubility: 1 g of the dried sample was mixed in 150 mL distilled water and boiled for 2 h and filtered through a filter paper. The residue was washed with hot water, dried in an oven and weighed.

Solubility in 1% NaOH: 1 g of the dried sample was mixed in 1% 100 mL NaOH. It was refluxed for 2 h and filtered through a filter paper and washed with hot water. The residue was dried and weighed.

Solubility in 1% HCl: 1 g of the dried sample was put in 1% 100 mL hydrochloric acid solution. It was refluxed for 2 h and filtered through a filter paper and washed with hot water. The residue was dried and finally weighed till it showed constant weight.

The percentage of moisture content, ash content, solubility in cold water and hot water, solubility in NaOH and solubility in HCl for the samples (leaves and flowers) are recorded (Table-1).

TABLE-1.
PERCENTAGE OF MOISTURE CONTENT, ASH CONTENT, SOLUBILITY IN COLD WATER AND HOT WATER, SOLUBILITY IN NaOH AND SOLUBILITY IN HCl FOR THE SAMPLES (LEAVES AND FLOWERS)

	Moisture content (%)	Ash content %	Solubility in cold water (%)	Solubility in hot water (%)	Solubility in 1% NaOH (%)	Solubility in 1% HCl (%)
SEPTEMBER						
Area-I: ST. HINDU COLLEGE CAMPUS						
Leaves	71.03	48.33	65.93	42.23	67.83	55.48
Flowers	72.47	33.46	48.05	38.77	57.64	64.91
Area-II: VADASERY						
Leaves	70.11	42.65	60.83	40.33	78.36	56.73
Flowers	77.72	38.94	46.52	37.80	56.18	65.36
Area-III: HANEEFA NAGAR						
Leaves	65.36	53.03	51.52	39.34	79.98	50.14
Flowers	73.50	30.03	45.98	31.74	75.96	66.73

	Moisture content (%)	Ash content %	Solubility in cold water (%)	Solubility in hot water (%)	Solubility in 1% NaOH (%)	Solubility in 1% HCl (%)
FEBRUARY						
Area-I: ST. HINDU COLLEGE CAMPUS						
Leaves	70.20	49.30	65.78	41.82	67.41	55.23
Flowers	71.30	34.72	47.50	38.33	57.42	64.25
Area-II: VADASERY						
Leaves	69.20	44.51	60.20	39.82	80.30	63.10
Flowers	76.10	40.10	46.14	36.48	55.83	65.25
Area-III: HANEEFA NAGAR						
Leaves	64.09	54.30	50.90	38.92	79.20	49.93
Flowers	72.43	32.20	45.83	31.25	75.30	66.24

Moisture content and ash content have negative correlation. Hot water soluble matter was less than the cold water soluble matter because on heating soluble substance may get converted into insoluble substance. This same trend was observed by earlier workers also².

Conclusion

All the parameters showed seasonal and regional variations.

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