



Seasonal variation in protein and chlorophyll content leaves of *Ailanthus excelsa* roxb

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Abstract

Ailanthus excelsa Roxb is useful in preventing Asthma, Bronchitis, Washing wounds, skin eruptions, Anthelmintic, Gout, Cholera and Dysentery. So it has medicinal important plant species. The present paper deals with the seasonal aspects on *Ailanthus excelsa* Roxb. Study of protein estimation showed that maximum amount was observed during monsoon season (23.44 ± 0.53); however minimum was recorded during summer season (5.97 ± 0.09). Maximum amount of chlorophyll were observed during winter season (10.89 ± 0.05 mg/g.fr.wt; 3.93 ± 0.02 mg/g.fr.wt); however minimum during summer season (4.09 ± 0.05 mg/g.fr.wt; 2.98 ± 0.04 mg/g.fr.wt). Amino acids showed highest amount during monsoon (2.03 ± 0.13) and lowest during summer (1.31 ± 0.04). Present study showed that the best time for collecting plants for medicinal uses is monsoon. and winter.

Keywords: *Ailanthus excelsa*, protein, amino acids, chlorophyll

Introduction

The plant *Ailanthus excelsa* commonly known as 'Arduso' is very abundantly growing in Bhavnagar city. *Ailanthus excelsa* belonging to family Simaroubaceae, and Tall, deciduous trees, with greenish – white or grey, smooth bark. Leaves long, crowded at ends of soft branches; leaflets sub opposite, The leaves are 3-9 cm long, pinnate; leaflets 8-14 pairs, 10-15 cm long alternate or sub opposite, coarsely and irregularly serrate, oblique at base; petioles 5-8 cm long. Ovate -lanceolate, coriaceous, densely pilose, at length glabrous. Flowers yellow, terminal and axillary, hairy panicles. Samara a spindle – shaped, glabrous, one-seeded reticulately veined. Seeds glabrous, oblong. This plant is medicinally very important and used for many medicinal purposes. The leaves are rated as highly palatable and protein rich nutritious fodder for sheep and goats and are said to augment milk production. In this paper we have studied the seasonal variation of chlorophyll and protein content of this plant. The stem and branches are used for fuel wood but it gives poor quality fuel as it burns quickly and does not sustain heat for long.

Material and Methods

Fresh leaves were collected from different part of Bhavnagar city in air tight polythene bags. That fresh material brought into the laboratory for chlorophyll estimation by Harborne (1973). The dried plant material used for protein and amino acids analysis. (Lowery *et al.*, 1951; Harding and Maclean, 1916.)

Result and Discussion

In case of chlorophyll a and chlorophyll b the maximum amount was observed during winter (10.89 ± 0.05 mg/g. fr. wt; 3.93 ± 0.02 mg/g. fr.wt) and lowest was observed in summer (4.09 ± 0.05 mg/g. fr. wt; 2.98 ± 0.04 mg/g. fr. wt) Table 1. Seasonal study of plant for plant is most important for phytochemical analysis. The present study showed that summer is stress period with plant having low amount of chlorophyll a and b. These pigments are the two most important chlorophyll pigments in the photosynthesis. The low amount during summer may be due to less availability of water. (Pandit *et al.*, 1999) [6] According to Brickman (1973) [1] yield and biomass production of plant correlates positively with the net photosynthesis. So the maximum biomass and yield was found during winter due to maximum amount of chlorophyll content.

Table 1: Seasonal variation of chlorophylls and protein content of *Ailanthus excelsa* Roxb.

	Winter Mean \pm SD	Summer Mean \pm SD	Monson Mean \pm SD
Chlorophyll a mg/g.fr.wt	10.89 ± 0.05	4.09 ± 0.05	8.1 ± 0.05
Chlorophyll b mg/g.fr.wt	3.93 ± 0.02	2.98 ± 0.04	3.37 ± 0.111
Protein content mg/g.dr.wt	13.34 ± 0.22	5.97 ± 0.09	23.44 ± 0.53
Amino acid content mg/g.dr.wt	1.16 ± 0.03	1.31 ± 0.04	2.03 ± 0.13

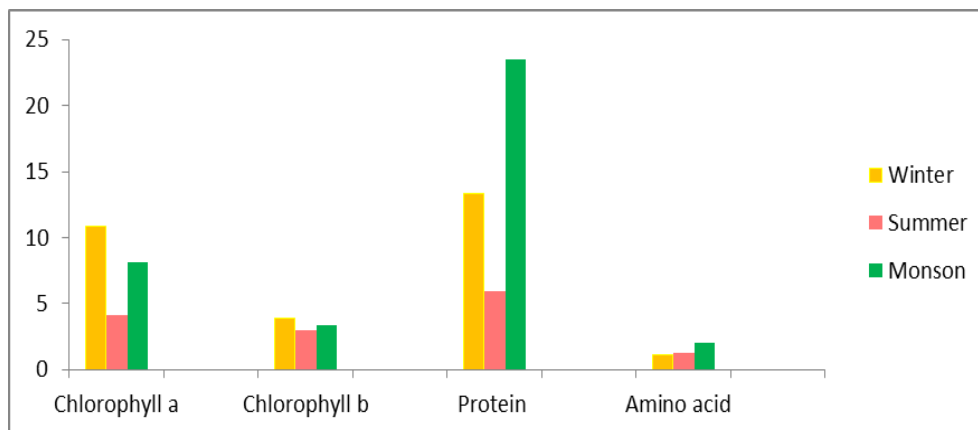


Fig 1: Chlorophylls and protein content in *Ailanthus excelsa* leaves

Seasonal study of protein content showed maximum amount during monsoon and lowest in summer. (Table 1) Such result also observed by Hanson and Hitz (1982)^[2]; Pandit *et al.*, (1999)^[6] Rahman *et. al.*, (1982)^[7] observed the same characterized temporal difference between the fractions. The variation of protein content during different season may be due to growth of plant. (Pandit *et al.*, 1999)^[6] Seasonal study for amino acid showed maximum amount during monsoon season and lowest in summer. (Table 1) This may be due to the different step of growth and different climate conditions. The present study recorded that the highest amount of protein and amino acids were found in monsoon. Best season for plant collection for protein and amino acids and chlorophyll is monsoon and winter respectively.

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