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### ESTIMATION OF PIGMENTS CONTENT IN LEAVES OF *CASSIA TORA* LINN.

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**Abstract:** *Cassia tora* Linn. has been found to display varied pharmacological activities. Several research workers have reported diverse biological activities of *Cassia tora* Linn. in various in vitro and in vivo experimental models. It is a medicinal plant traditionally used as laxative, for the treatment of leprosy and various skin disorders. The continuous two year investigation showed that leaves generally accumulated highest amount of chlorophyll a (3.221), chlorophyll b (1.665) and carotenoid (3.682) in summer season compare to monsoon and winter.

**Keywords:** Chlorophyll a, chlorophyll b, carotenoid and *Cassia tora*



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## INTRODUCTION

Medicinal plants are having richest resource of medicinal properties and drugs. Number of medicinal systems is directly or indirectly dependent on plants neutraceuticals, food supplements, folk medicines, traditional systems of medicine, modern medicines, and pharmaceutical intermediates. (Hammer et.al, 1999). Medicinal plants are used for the treatment of many diseases. In nature number of medicinal plants are naturally grown and has relied on the vast variety of natural chemistries' found in plants for their biochemical and therapeutic properties (Seyyed, et.al, 2010). Medicinal plants are not having the pharmaceutical approach, but there is a wider and diverse tendency to utilize herbal plant product to supplement the food, diet, and its main intense is to improving the quality of human as well as animal life and preventing the number of diseases (Maffei. 2003).

*Cassia tora* (sub-family: Caesalpinioideae; Family: Leguminosae / Fabaceae) is a small shrub which grows up in warm moist soil throughout the tropical parts of Asian and African countries, with a height of 30 to 90 cm. It grows as a wild shrub mostly in the tropical regions and is considered as a weed in most places. Its native range is not well known but it is mostly found in South Asia. This plant popularly known as 'Sickle pod' (Maity et.al., 1998). It is mainly found in the states of Uttar Pradesh, Maharashtra and Madhya Pradesh, in India. 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 K and Rao SS, 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 J F, 1962). The leaves are alterative, aperient, antiperiodic and given to children suffering from intestinal disorders (Manojlovic I- et.al, 2006). The leaves, roots, and even the whole *Cassia tora* is used as a natural pesticide in organic farms. The seeds yield yellow, blue and red coloured dyes used in dyeing and tanning therefore *Cassia tora* powder is most popularly used in the pet-food industry. It is mix with guar gum for use in mining and other industrial application (Soni et.al, 2000).

## MATERIALS AND METHODS:

The amount of Chlorophyll a, Chlorophyll b, and Carotenoid were calculated by the methods of Duxbury and Yestsch, 1956 and Maclachalam and Zalik, 1963. The pigments of Chlorophyll a, Chlorophyll b, and Carotenoids were extracted from leaf by using 80 % of acetone. The different optical densities were recorded at 480, 510, 645 and 663 nm in spectrophotometer.

$$1) \text{ Calculation for Chlorophyll a} = \frac{12.3D_{663} - 0.86D_{645}}{d \times 1000 \times W} \times V$$

$$2) \text{ Calculation for Chlorophyll b} = \frac{19.3D_{645} - 3.6D_{663}}{d \times 1000 \times W} \times V$$

$$3) \text{ Calculation for Carotenoids} = \frac{7.6D_{480} - 1.49D_{510}}{d \times 1000 \times W} \times V$$

Where as

‘d’ is the length (cm) of light path, ‘V’ is the volume of the chlorophyll solution and ‘W’ is the fresh weight of leaves of *Cassia tora*.

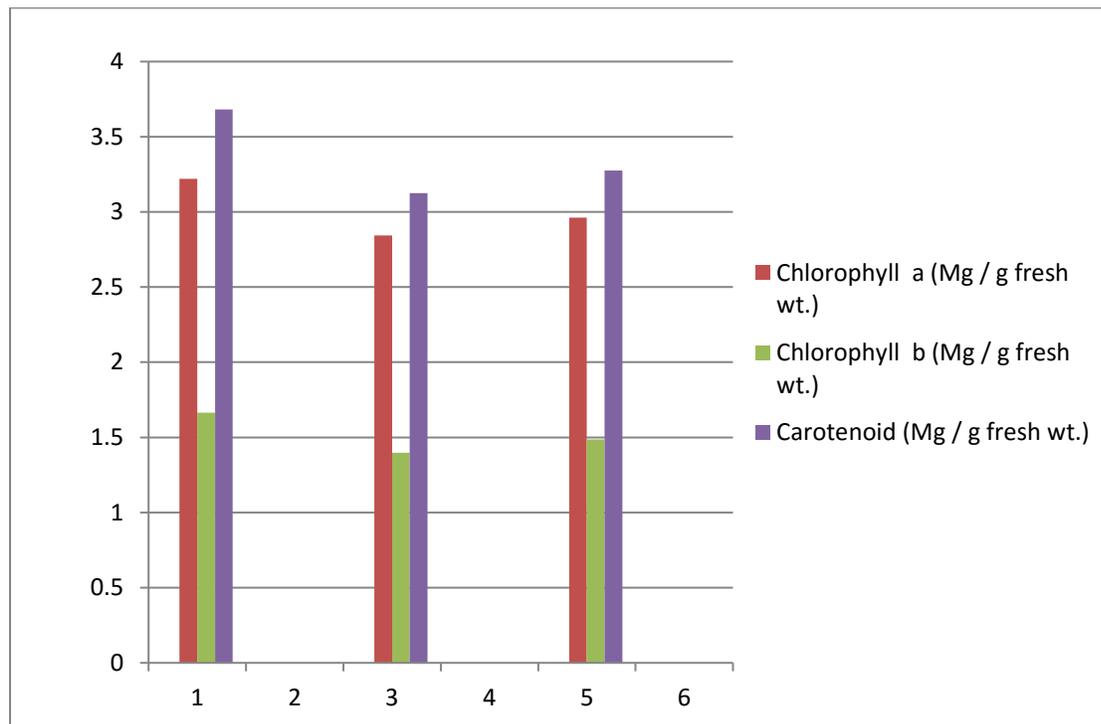
### RESULTS AND DISCUSSION:

Chlorophyll is the green pigment present in plant plays vital role in photosynthesis which absorbs light from sun and uses its energy to synthesize carbohydrates from CO<sub>2</sub> and water. Carotene function as accessory pigments in plants, helping to fuel photosynthesis by gathering wavelengths of light not readily absorb by chlorophyll. They have been shown to act as antioxidants and to promote healthy eye sight in humans.

The chlorophyll a, content of leaves was raised in summer (3.221 mg /g fresh wt.) over that of winter (2.962 mg /g fresh wt.) and monsoon (2.843 mg /g fresh wt.). The chlorophyll b, content of leaves was higher in summer (1.665 mg /g fresh wt.) over that of winter (1.486 mg /g fresh wt.) and monsoon (1.398 mg /g fresh wt.). The carotenoid, content of leaves was accumulated more in summer (3.682 mg /g fresh wt.) over that of winter (3.276 mg /g fresh wt.) and monsoon (3.125 mg /g fresh wt.). The range of chlorophyll a, chlorophyll b and carotenoid were found to be in increasing order of monsoon < winter < summer (Table No.1 and Graph No.1)

**Table No. 1 - Content of pigment in leaves of *Cassia tora* L.**

Season	Chlorophyll a (Mg / g fresh wt.)	Chlorophyll b (Mg / g fresh wt.)	Carotenoid (Mg / g fresh wt.)
Summer	3.221	1.665	3.682
Monsoon	2.843	1.398	3.125
Winter	2.962	1.486	3.276

Graph No. 1 - Content of pigment in leaves of *Cassia tora* L.**REFERENCES:**

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