

Variation of Chlorophyll Content Among the Different Tulsi Species Found in Nuapada District, Odisha

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ABSTRACT

The Tulsi plant, also known as Holy Basil, is a sacred herb in Hinduism and is revered for its medicinal properties as well. It belongs to the Lamiaceae (mint) family and is native to the Indian subcontinent. Tulsi is widely cultivated and is found in many Hindu households where it is worshipped daily. In this work there was an attempt to made to find out chlorophyll content of different Tulsi species found in Nuapada district, Odisha. In this work we were compare chlorophyll pigment of 4 different species of tulsi of Nuapda such as *Ocimum tenuiflorum* (black tulshi), *Ocimum sanctum* (green tulshi), *Ocimum basilicum* (dohna) and *Ocimum gratissuma* (van tulshi). Among them maximum total chlorophyll content found in *Ocimum tenuiflorum* And list in *Ocimum sanctum*. The chlorophyll a found maximum in *Ocimum basilicum*. And minimum in *Ocimum gratissuma*. The chlorophyll b found maximum in *Ocimum basilicum* and minimum in *Ocimum tenuiflorum*. The total chlorophyll found *Ocimum gratissum* and minimum in *Ocimum sanctum*. Such type of work provides us data regarding distribution of chlorophyll in different species of a genera.

Keywords- Tulsi, Lamiaceae Chlorophyll, Nuapada, Medicinal properties.

I. INTRODUCTION

The Tulsi plant, also known as Holy Basil, is a sacred herb in Hinduism and is revered for its medicinal properties as well. It belongs to the Lamiaceae (mint) family and is native to the Indian subcontinent. Tulsi is widely cultivated and is found in many Hindu households where it is worshipped daily. *Ocimum sanctum* L. (Tulsi) is an erect, much branched sub-shrub 30-60 cm tall, with simple opposite green or purple leaves that are strongly scented and hairy stems. Leaves have petiole and are ovate, up to 5 cm long, usually somewhat toothed. Flowers are purplish in elongate racemes in close whorls. Tulsi is native throughout the world tropics and widespread as a cultivated plant and an escaped weed. Rashmi Chandra, et.al. (2011) and Roy (2020) works on antimicrobial properties of tulsi.[1&2] It is used in treatment of cancer reported by N Sing, et.al.(2012).[3]

Chlorophyll is the photosynthetic green pigment of plants, there are generally a type of chlorophyll. Chlorophyll a & chlorophyll b to found in terrestrial plant chlorophyll is a green pigment that has capacity to light energy into chemical energy in particular process of such conversion is called as plant that photosynthesis. Beside photosynthesis chlorophyll have several health. benefit like and oxidant property, use in cancer prevention treatment of arthroids, management of obesity, Removal of liver toxicity etc. Medicinal use of chlorophyll was reported by Mishra et.al. (2011) & Kizhedath, A., & Suneetha, V. (2011).[4&5]

Nuapada District belongs to state of Odisha, India. The District is located in the western part of Odisha. It lies between 20 degree N and 21 degree 5' latitude and 82 degree 40' E longitude. The boundaries of Nuapada extends in the north, west and south to Raipur District of Chattishgarh and in the east to Bargarh, Balangir and Kalahandi Districts of Odisha.

This district is spread over in an area of 3,852 square K.m. Generally four species of Tulsi found such *Ocimum tenuiflorum*(black tulshi), *Ocimum sanctum* (green tulshi), *Ocimum basilicum*(dohna) and *Ocimum gratissum* (Vana tulshi).

In this work there was an attempt to made to find out chlorophyll content of different Tulsi species found in Nuapada district, Odisha.

II. METHODOLOGY

The four species Tulshi such as *Ocimum tenuiflorum* (black tulshi), *Ocimum sanctum* (green tulshi), *Ocimum basilicum* (dohna) and *Ocimum gratissum* (van tulshi) were collected from different parts of Nuapada district. Chlorophyll was extracted and estimated as per Arnon in 1949 with help of a spectrophotometer.[6]

III. RESULTS

Form the experiment following results were found.

In *Ocimum tenuiflorum* chlorophyll a contain 244.66, chlorophyll b contain 156.51 and total chlorophyll contain 321.04.

In *Ocimum sanctum* chlorophyll a contain 45.774, chlorophyll b contain 82.636 and total chlorophyll contain 128.366.

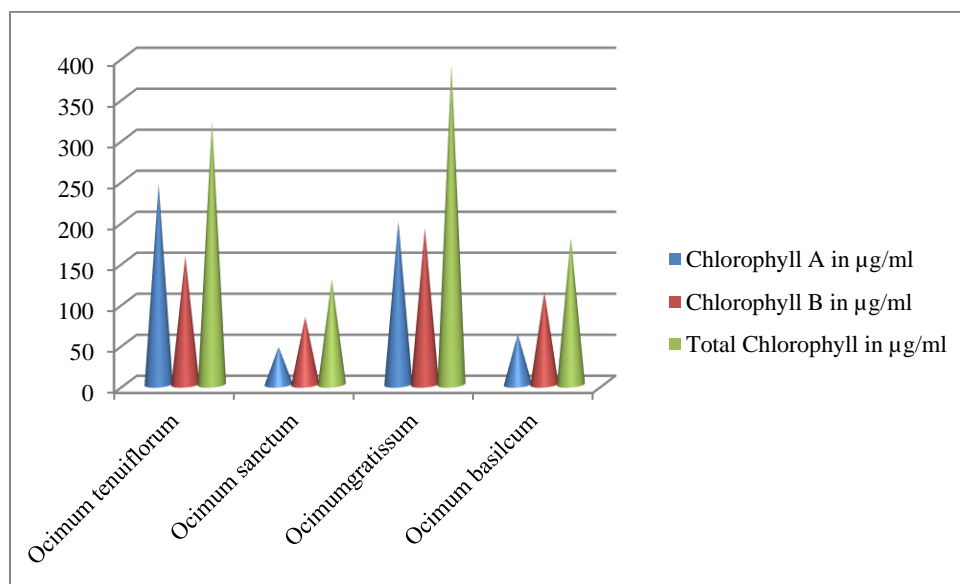
In *Ocimum gratissum* chlorophyll a contain 199.33, chlorophyll b contain 190.85 and total chlorophyll contain 390.04.

In *Ocimum basilicum* chlorophyll a contain 61.523, chlorophyll b contain 112.722 and total chlorophyll contain 179.18.

Comparison of chlorophyll content reflected in table and graphs.

Table: Comparison of chlorophyll among the *Ocimum* species

	Name of the species	Chlorophyll A in $\mu\text{g/ml}$	Chlorophyll B in $\mu\text{g/ml}$	Total Chlorophyll in $\mu\text{g/ml}$
1	<i>Ocimum tenuiflorum</i>	244.66	156.51	321.04
2	<i>Ocimum sanctum</i>	45.774	82.636	128.366
3	<i>Ocimum gratissum</i>	199.33	190.85	390.04
4	<i>Ocimum basilicum</i>	61.523	112.722	179.18



Graph: Comparison of chlorophyll among the ociumum species

IV. CONCLUSION

In this work we were compare chlorophyll pigment of 4 different species of tulsi of Nuapada such as

Ocimum tenuiflorum (black tulshi), *Ocimum sanctum* (green tulshi), *Ocimum basilicum*(dohna) and *Ocimum gratissuma*(van tulshi) .Among them maximum total chlorophyll content found in *Ocimum tenuifflorum* And list in *Ocimum sanctum*. The chlorophyll a found

maximum in *Ocimum basilicum*. And minimum in *Ocimum gratissimum*. The chlorophyll b found maximum in *Ocimum basilicum* and minimum in *Ocimum tenuiflorum*. The total chlorophyll found *Ocimum gratissimum* and minimum in *Ocimum sanctum*. This results satisfy previous works of Mishra et.al 2022 which also concluded that there was a little variation in chlorophyll content according to geographic variation.[7] This type of work provides us data regarding distribution of chlorophyll in different species of a genera, and high amount of chlorophyll indicate maximum photosynthetic activity of that plant and its medicinal importance.

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