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Comparative Phytochemical and Nutritional Studies of Leaves and Stem of Three Lamiaceae Members

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ABSTRACT

Preliminary phytochemical and proximate analysis of leaves and stem of three lamiaceae members i.e. *Ocimum sanctum* L. *Hyptis suaveolens* Poit. and *Plectranthus mollis* L. was carried out. The preliminary phytochemistry reveals that, these plants are rich in phytochemical constituents like Alkaloids, Flavonoids, Tannins, Saponins and cyanogenic glycosides. The proximate analysis showed significant nutritional composition with high level of proteins, lipids, carbohydrate and fibers. Thus, apart from the ethnomedicinal uses, these plants can be use as source of dietary components.

Keywords: *Hyptis suaveolens*, *Ocimum sanctum*, *Plectranthus mollis*, Proximate analysis, Phytochemistry.

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INTRODUCTION

Being the member of mint family i.e. Lamiaceae, all three species: *Ocimum sanctum* L. and *Hyptis suaveolens* Poit. and *Plectranthus mollis* are strongly aromatic. All three plants are widely used by the local and tribal communities to cure various ailments. This suggests the role of these plants in traditional medicines. *O. sanctum* is being used on common cold, cough, fever, as stimulant and anthelmintic. It is also used as mosquito and insect repellent. *H. suaveolens* and *P. mollis* are also used mostly by tribals, for similar uses [1, 2].

The present paper deals with the preliminary phytochemical investigation of *O. sanctum*, *H. suaveolens* and *P. mollis* to identify the major group of phytoconstituents, which impart the medicinal properties to the plants. Secondly, the nutritional values of these herbs to check the possibilities of using as food supplements.

MATERIAL AND METHODS

Leaves and stem of *O. sanctum*, *H. suaveolens* and *P. mollis* were collected from, the agricultural field of PDKV and roadsides around Akola city. The plants were taxonomically identified with the help of flora of Maharashtra and specimens were deposited in the herbarium of PG Department of Botany, Shri Shivaji College, Akola (MS) India.

Preliminary phytochemistry

The phytochemical analysis was done as described by Harborne [3] and crude phytoconstituents were estimated as per Harborne [3] and Edeoga et al [4].

Proximate analysis

The protein content was analyzed using Bradford's method [5]. Crude fiber determination and Fat content was done as described by Sadasivam and Manikam [6]. Carbohydrates were determined by difference.

RESULTS AND DISCUSSION

Phytochemical analysis:

The preliminary phytochemistry and crude estimation of phytoconstituents was done in *O. sanctum*, *H. suaveolens* and *P. mollis*. The estimated phytoconstituents includes alkaloids, flavonoids, tannins, saponins and cyanogenic glycosides. The results indicate the highest amount of phytoconstituents in *H. suaveolens* leaves and stem followed by *O. sanctum* and *P. mollis* (Table-1). Among all estimated phytoconstituents, crude quantity of alkaloids is higher in leaves of *H. suaveolens* (14.30 %), however its percentage in leaves *O. sanctum* and *P. mollis* is nearly similar (11.80 % and 11.20 % respectively). The leaves of *H. suaveolens* also possess highest amount of flavonoids (12.50%) followed by *O. sanctum* (11.50 %) and least if *P. mollis*

(1.20 %). The estimated amounts of cyanogenic glycosides are showed the above trend of availability (Table-1).

Component	<i>O. sanctum</i> (% composition)		<i>H. suaveolens</i> (% composition)		<i>P. mollis</i> (% composition)	
	Stem	Leaves	Stem	Leaves	Stem	Leaves
Alkaloid	07.50	11.80	9.60	14.30	08.60	11.20
Flavonoids	06.30	11.50	5.40	12.50	03.25	01.20
Tannin	00.45	03.55	0.30	5.60	0.45	01.14
Saponins	00.76	00.28	10.80	6.40	03.40	0.031
Cyanogenic glycoside	32.18 mg/100gm	25.66 mg/100 gm	50.20 mg/100 gm	41.55 mg/100 gm	22.20 mg/100 gm	18.38 mg/100 gm

Results are mean of triplicates

Nutritional Analysis:

Proximate analysis of showed the crude protein, fibers, lipid and carbohydrate availability in the *O. sanctum*, *H. suavelons* and *P. mollis* leaves and stem (Table-2). It is observed that all three plants showed crude proteins in the range of 8.50% to 12.30 %; highest in *O. sanctum* leaves. The fat content was found in the range 2.00% to 4.25%; highest in leaves of *P. mollis*. Carbohydrate content was found highest in leaves of *O. sanctum* (77.75%) followed by *P. mollis* and *H. suaveolens* respectively (Table-2). The moisture content and ash content was also found high in *O. sanctum* followed by *H. suaveolans* and *P. mollis* respectively (Table-2).

Component	<i>O. sanctum</i> (% composition)		<i>H. suaveolens</i> (% composition)		<i>P. mollis</i> (% composition)	
	Stem	Leaves	Stem	Leaves	Stem	Leaves
Protein	09.25	12.30	08.50	10.00	09.00	11.25
Lipids	02.75	03.00	02.00	02.00	03.55	04.20
Fiber	18.30	07.00	15.25	05.15	17.65	09.50
Carbohydrates	68.05	77.70	60.40	72.60	69.10	75.05
Moisture content	88.30	83.55	85.50	82.75	83.45	80.75
Ash	20.15	18.35	9.55	11.40	17.15	12.35

Results are mean of triplicate estimation

The phytochemical and nutritional studies were reported in some medicinal plants including the members of lamiaceae [7,8] . Our results are in analogy with these reports. However, the authors have reported comparative studies of phytochemistry and proximate analysis for the first time. The results indicate that, all the plants under study are rich in phytochemical constituents and their medicinal values must be attributed to this. Secondly, they are also showing the significant amount of nutritional contents specifically in leaves. Thus they can also be used as the nutritional dietary supplements. The further research on this aspect are continued to identify active phytochemical principals and nutritional value indexing.



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