



Phytochemical analysis of some plants of family Lamiaceae occurring in local area of Deulgaon Raja

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Abstract

The members of Lamiaceae family include aromatic plants that are being used in traditional medicine for various disorders used as medicine all over the world. Also, some of the secondary metabolites isolated from this family have shown interesting biological function. In this study we have analyzed phytochemicals of some plants from Lamiaceae family (*Ocimum sanctum*, *Ocimum gratissimum*, *Mentha arvensis*). The plant species were collected and systematically identified during last two years. The traditional and local uses of collected plants were questioned through informed consent semi-structured interviews with local informants. The samples were extracted using solvents like chloroform, ethanol, and water. Phytochemical analysis was conducted to test the presence of compounds such as flavonoids, saponins, tannins, and terpenoides. The presence of these phytochemicals can be correlated with the medicinal potential of this plant.

Keywords: medicinal plants, lamiaceae, acetone extract, methanol extract, water extract phytochemicals

Introduction

The study and identify of used medicinal plants by local people is desirable, not only for the discovery of therapeutic agents, but also because such information may be valuable for disclosing new sources of such economic materials as tannins, oils, gums, precursors for the synthesis of complex chemical substances. About 85% of the traditional medicines used by different ethnic groups inhabiting various terrains for primary healthcare are derived from plants, especially in India; medicinal plants are widely used by all sections of the population with an estimated 7500 species of plants used by several ethnic communities (Farnsworth, 1988) [4]. Many of the plants from the Lamiaceae have been traditionally used as medicine all over the world. The value of these plants lies in some chemical substances that produce a definite physiological action on the human body, especially through flavonoids and phenolic compounds. Many of these indigenous medicinal plants are used as spices and food plants. Also the Lamiaceae taxa have a significant role and are applied as infusion of the aerial parts or as powder mixed with honey or olive oil. The plant is being used by the local peoples and tribal of Maharashtra as ethno medicine on various ailments. This plant is also being used for its anti-inflammatory, anti diarrheal properties by various communities in Indian subcontinent and also across the world. The present study was designed to evaluate the fundamental phytochemical constituents of this wild medicinal plant. The important bioactive components in plants are usually the secondary metabolites such as alkaloids, flavonoids, tannins and other phenolic compounds (Edeoga *et al.*, 2005) [3]. The present work aims at evaluating the phytochemical composition, by qualitative and quantitative methods, of methanol, ethanol and chloroform extracts of three other members of the Lamiaceae family, namely, *Ocimum sanctum*,

Ocimum gratissimum, *Mentha arvensis* are known to be of medicinal use. The use of *Ocimum sanctum*, *Ocimum gratissimum*, *Mentha arvensis* in traditional medicine is represented in table.

Materials, methods & data collection

The plant material was collected from Deulgaon Raja locality. The plants were identified and authenticated by a expert. Observation, oral semi-structured interviews and questionnaires were the tools commonly used for data collection. The plants were collected around the villages of the informants and were shown to them to confirm the plant names. The oral interviews were directed with the assistance of an interpreter, who was guided by village elders from different districts who were well introduced with the medicinal informants. The questionnaire contained information about local naming, parts which were used for medicinal-medicine-nutritional purposes and mode of folk preparation some of plants from Lamiaceae. All information was recorded. The data collection process lasted 2 years.

Procedure for phytochemical tests

Phytochemical analysis was conducted to test for the presence of compounds such as flavonoids, saponins, tannins, and terpenoides. Aerial parts of the plant species of Lamiaceae collected from the study area were investigated. The chemical tests were carried out on the aqueous extract and on powdered sample from the aerial part using standard procedures to identify the constituents. Fresh leaves were collected, washed with distilled water, shade dried till it is crisp and cut into small pieces. These dried samples were powdered and stored at 40°C until further use. Crude extracts (10% w/v) were made using 3 solvents i.e., methanol, ethanol and chloroform. The extracts were filtered through fine muslin cloth and the clear

filtrate was evaporated to dryness to form the crude extract and stored at 40C for further use. The phytochemical tests of the various plant species was supposed to reveal the presence or absence of the various secondary metabolites.

Phytochemical screening: The chemical tests were carried out with the crude extracts of each plant i.e. Methanol extract (ME), Ethanol extract (EE) and Chloroform extract (CE).

Tests for tannins: About 2 ml of the aqueous extract was stirred with 2 ml of distilled water and few drops of FeCl₃ Solution were added. Formation of green precipitate was indication of presence of tannins.

Tests for saponins: 5 ml of aqueous extract was shaken vigorously with 5 ml of distilled water in a test tube and warmed. The formation of stable foam was taken as an indication of the presence of saponins.

Tests for flavonoids: To 1 ml of aqueous extract, 1 ml of 10% lead acetate solution was added. The formation of a yellow precipitate was taken as a positive test for flavonoids.

Test for terpenoids: 2ml of the organic extract was dissolved in 2 ml of chloroform and evaporated to dryness. 2 ml of concentrated sulphuric acid was then added and heated for about 2 min. Development of a greyish colour indicates the presence of terpenoids.

Table 1: Medicinal uses of the plants in the study

Plant species	Common name	Traditional uses
<i>Ocimum sanctum</i>	Tulasi	Cough cold, Chronic fever, Sore throat, Bronchial asthma, Malaria, Bronchitis, Skin diseases, Arthritis, Diarrhea, Dysentery
<i>Ocimum gratissimum</i>	Rantulas	Cough cold, Chronic fever, Sore throat, Bronchial asthma, Malaria, Bronchitis, Skin diseases
<i>Mentha arvensis</i>	Pudina	Digestive Ailments Acne, Bronchitis, Burns, Colds, Liver Problems, Headaches, Toothache

Table 2: Phytochemical constitute of the leaf extract:

Plant species	Tannins	Saponins	Flavonoids	Terpenoids
<i>Ocimum sanctum</i>	-	+	+	+
<i>Ocimum gratissimum</i>	-	+	++	+
<i>Mentha arvensis</i>	++	-	++	+

Results and Discussion

The results confirm the presence of constituents which are known to exhibit medicinal as well as physiological activities (Mukeshwar *et al.*, 2011) [11]. Lamiaceae family is useful for scientists and pharmaceutical industries compared with other species. They can help us to identify medicinal plants as well as to eliminate the practices that may be harmful. Also the therapeutic effects of plants can be attributed to the phytochemicals such as alkaloids, flavonoids, sterols, saponins, tannins, terpenoids and glycosides which can show a curative activity against pathogens and therefore support their

traditional usage in various illnesses The phytochemical characteristics of the leaf extract were investigated are summarized in table-2. The results obtained in this study thus suggest that the identified phytochemical compounds may be the bioactive constituents responsible for the efficacy of the leaves of the plants studied. The presence of some of these compounds has also been confirmed to have antimicrobial activity. Hence it could be inferred that the plant extracts could be a source for the industrial manufacture of drugs useful in the chemotherapy of some microbial infection. Tannins have been reported to show antimicrobial, antitumor, anti-inflammatory and wound healing properties in other organs. The flavonoids display a remarkable array of biochemical and pharmacological actions as well as anti-inflammatory, antioxidant, anti allergic, hepatoprotective, antithrombotic, antiviral antidiarrheal, and anti-carcinogenic activities. Saponins are glycoside of both triterpenes and sterols and are used as expectorant and emulsifying agent

Conclusion

According to our results, used plants in Deulgaon Raja locality can be as a potential source of useful drugs. Thus the evaluation of the pharmacological private for medicinal plants of this region is suggested and further researches on the secondary metabolites of the plants are recommended.

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