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Indigenous medicinal practices of *Ocimum basilicum* L. in rural Kashmir

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Abstract

The plant *Ocimum basilicum* is also called as Sweet basil, Royal herb, King of herbs, Tukh malanga, etc., locally it is called Babr or Babri kul in Kashmiri. This herb is cultivated by different people of different communities for their local use and also for sale purposes. The present study was undertaken by conducting a detailed survey of two districts of Kashmir valley viz., Srinagar and Ganderbal during the year 2018-2019. During the survey in the above mentioned districts, discussions with the various herbal healers viz., *Hakeem's* and *Bhoris*, it was found that many ailments were found to be treated by *Ocimum basilicum*. The main ailment categories that are treated include gastrointestinal, cardiovascular, respiratory diseases, skin diseases, renal/urinary disorders, mental problems, muscular/skeletal disorders, eye diseases, oral infections, worm infections, and gynecological disorders, ENT, fever, snake and insect bites, cancer and others. It was found that 46% of the seeds followed by 26% of leaves, 19% of whole plant, 3% of flowers, and 2% of stem and roots are used for treatment of different diseases under traditional systems of medicine. Modes of utilization or preparations were entire seed, powder, decoction, juice, paste, tea and extract. Most commonly used preparation were seed soaked in water followed by powder decoction, paste, tea and extract. Seed soaked in water was found to be most common mode of utilization. Majority of the gastrointestinal diseases (22%) followed by skin diseases (17%), respiratory diseases (12%), mental and cardiovascular diseases (10%), urinary/renal (8%), eye diseases, oral infections and ENT (7%), muscular/skeletal, gynecological and worm infections (5%), Snake and insect bites (3%) and others (1%) were treated by using different parts of *Ocimum basilicum* after proper processing and at prescribed treatment procedure by the concerned *Hakeems* and *Bhoris*.

Keywords: Ailments, Hakeem's and Bohris, herbal formulations, ocimum, treatment procedure

Introduction

Human use of plants as medicines could be dated back to the Middle Paleolithic Age, which is about 60,000 years ago, according to fossil records (Fabricant and Farnsworth, 2001) [4]. In ancient times, health care included the use of leaves, berries, flowers, stems and roots of herbs for their therapeutic or medicinal value. Initially, these medicines took the form of crude drugs such as tinctures, poultices, powders, teas, and other herbal formulations (Samuelsson, 2104) [11]. Knowledge of the specific plants to be used with their methods of application for particular ailments were passed down through oral history and the information regarding medicinal plants was eventually recorded in the herbals (Balunasa and Kinghorn, 2005) [1]. Presently 80 per cent of the world's population depends on traditional medicine for treatment of different ailments, folk medicine is recognized throughout the world as a credible healthcare resource (Shinwari and Qaisar, 2011) [12].

According to World Health Organization (WHO report of 2002) [15], 70 per cent population of the world depend on the Traditional Health Care System for curing various diseases. This system is well known for the minimal side effects and relatively low cost it offers as compared to other systems of medicine. This is the reason that patients in the developing countries such as Bangladesh (90%), Myanmar (85%), India (80%), Nepal (75%), Sri Lanka (65%) and Indonesia (60%) have strong conviction in this system.

India is amongst the most important medicinal plant collection centers with 27% of the total known medicinal plant species of the world. There are about 15,000 to 20,000 plant species reported to have medicinal value with 30 per cent considered as endemic to the country. The union territory of Jammu and Kashmir is a mountainous zone in the north-west Himalaya with most complex and diverse physiography. The Kashmir Himalaya alone contributes nearly 2,000 (20%) of the plant species within just 2.15 per cent (15,948 km²) of the total land area (Dar *et al.*, 2002) [3].

The genus *Ocimum* of Lamiaceae family is represented by over 150 species (Javanmardi *et al.*, 2002) [6] that are collectively known as basils. These are grown in different countries for their

aromatic, nutritional, culinary, industrial, ornamental, religious and medicinal importance (Khosla, 1995) [7]. Basils are remarkable because of their ability to sense, respond to, and survive a variety of abiotic stresses, warm climate being the most favourable (Hiltunen and Holm, 1999) [5]. Among the plants known for medicinal value, the plants of genus *Ocimum* are rich in phenolic compounds and are very useful for their therapeutic potentials. *Ocimum basilicum* popularly known as Sweet basil is used in both Unani and Ayurvedic system of medicine. Moreover, among more than 150 species of the genus *Ocimum*, basil is the major essential oil crop which is cultivated commercially in many countries. It is a popular herb, valued for its rich and spicy, mildly peppery flavour with a trace of mint and clove and has been used widely as a food ingredient for flavouring confectionary, baked foods and meat products. It is used both as a culinary and an ornamental herb (Bilal *et al.*, 2012) [2]. Basil is a member of the Lamiaceae, used both as a culinary and ornamental herb. There is insufficient data on the demand and supply situation of medicinal and aromatic plants. Farmers have been taking initiatives to cultivate medicinal and aromatic plants but price instability affects the level of confidence of farmers necessary to take up large-scale cultivation. It is, in this direction, the present investigation entitled Indigenous medicinal practices of *Ocimum basilicum* L. in rural Kashmir was undertaken.

Materials and Methods

Investigations conducted on Indigenous medicinal practices of *Ocimum basilicum* L. in Kashmir were carried out in the Faculty of Forestry, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Benhama, Ganderbal during 2018-2019. The study was conducted in the two central districts of Kashmir valley viz., Srinagar and Ganderbal. Srinagar district is situated at an altitude of 1583 meters above sea level and lies between 33 degree-14' and 38 degree-25' north latitude and 74 degree-38' east longitude, in the centre of valley of Kashmir. The Ganderbal district is located between 34.23 °N Longitude and 74.78 °E Latitude. Purposive sampling technique was employed in the two districts viz., Srinagar and Ganderbal to select the villages and households in order to reach target sample quickly. The first stage was the selection of villages of which 5 villages (Faquir Gujari, Chek Dara, Dara, Harwan and Saedpora) from district Srinagar and 5 villages (Lar, Watlar, Saloora, Plang and Kangan) from district Ganderbal were selected. The second stage was selection of households. A sample of 60 households was drawn from the sample villages having 5 percent sampling intensity using simple random sampling technique for the field study. In order to achieve the research objectives, the present study included both qualitative and quantitative methods. Data were collected by using both secondary sources and primary field survey. This method was used to record the data on the basis of personal observation and interaction with the respondents. This technique helped to have firsthand on-the-scenes contact with the respondents, examine the behavior in natural situation and study the situation based features of conduct. The investigator gathered the facts by assuming several roles as participant, interviewer, stranger or listener in various social, cultural, religious or political activities. Ethnobotanical surveys were carried out in these districts during the year 2018. Appropriate methodology was used to obtain the information about the parts used formulation method, disease treated, treatment procedure for various diseases from *Ocimum basilicum*. The information

was collected from the local herbal healers called hakeems and bhoris by using questionnaire method.

Results and Discussions

It was found that *Ocimum basilicum* is an important medical plant used in traditional healthcare system in the areas studied. Different observations recorded viz., parts used, modes of consumption, diseases treated and treatment procedure for various diseases was studied and are presented in Table 1. Many ailments were found to be treated by *Ocimum basilicum*. The main ailment categories that are treated include gastrointestinal, cardiovascular, respiratory diseases, skin diseases, renal/urinary disorders, mental problems, muscular/skeletal disorders, eye diseases, oral infections, worm infections, and gynecological disorders, ENT, fever, snake and insect bites, and others. The oil of the plant has been found to be beneficial for alleviation of rhinitis, cold, mental fatigue, spasm and first aid treatment for wasp stings and snakebites.

Among the categories of diseases treated by *Ocimum basilicum*, gastrointestinal accounted maximum percent (22%) followed by skin diseases (17%), respiratory diseases (12%), mental and cardiovascular diseases (10%), urinary/renal (8%), eye diseases, oral infections and ENT (7%), muscular/skeletal, gynecological and worm infections (5%), Snake and insect bites (3%) and others (1%). High value of medicinal properties of *Ocimum basilicum* is evident from highest percentage of gastrointestinal disorders (Fig. 1). The traditional hakims and bhoris utilize different parts of plant as a remedy for different ailments. However, the use of a particular plant depends on the user's needs. Each and every part of *Ocimum basilicum* was used for treatment of different diseases. It was found that most of the plant parts are taken individually to cure diseases. However many disease treatments included utilization of more than just one plant part.

Modes of utilization or preparations were entire seed, powder, decoction, juice, paste, tea and extract. Most commonly used preparation were seed soaked in water followed by powder decoction, paste, tea and extract. Seed was found to be most common mode of utilization. (Table 1-6). Treatment process for diseases varies from individual to individual and is largely affected by the severity of the disease. For treatment of gastrointestinal diseases, the entire seed is soaked in water, to which flavours (optional) are mixed and made into a drink. For skin diseases, seed powder is mixed with oil, lime juice or with a clove of garlic to form paste which is applied to the affected area. Massaging the body daily with seed oil helps relieve epilepsy and other muscular/skeletal problems. For kidney/urinary stones, decoction/tea is made from leaves, flowers or from whole plant and taken orally twice a day for few weeks to dissolve kidney/urinary stones. Basil seeds and leaves are eaten raw to purify blood from toxins. For heart ailments basil seeds and leaves are taken twice a day to check blood pressure. For worm infections, leaf paste or juice orally taken by adults with molasses twice a day for 3-4 days for expulsion of round worms. For snake bites, the roots are ground with butter in mortar and juice is applied on the bitten part (Table 1-6). (Nida 2019) [10] reported 104 diseases to be treated using a single medicinal plant (*Bergenia ciliata*). (Rajoriya *et al.* 2016) [14] reported that a total of 30 plant species belonging to 19 different families were used traditionally by local inhabitants of district Bandipora to cure various diseases. (Mir 2014) [9] reported 36 plant species belonging to 25 families used to cure various skin diseases

like boils, cuts, blisters, itching, rashes, leukoderma, swelling, rabies, inflammation, wounds etc. (Mir *et al.* 2014)^[8] reported that 30 plant species belonging to 25 different families have been recorded for treatment of different diseases in Pulwama district. (Singh 2015)^[13] reported how medicinal plants have been used virtually in all cultures as a source of medicine to

treat health disorders and to prevent diseases including epidemics. These plants are in demand in market for commercial purpose. Plants are collected or cultivated and sold to the middlemen or contractors in terms of weight and not in terms of numbers.

Table 1: Ethnobotanical practices of *Ocimum basilicum* L. by seeds

Formulation method	Disease treated	Treatment procedure
Seed/ Powder/ Paste/ Oil	Muscle relaxant Healthy weight loss Blood pressure Ringworm infections Migraine Hoarseness Female disorders Kidney stones and urinary disorders Leucoderma (vitiligo) Constipation Snake and insect bites Itching Jaundice Epilepsy Skin diseases Arthritis Rheumatism Hairfall Earache Roundworms	<ul style="list-style-type: none"> Seed powder is mixed with edible oil to form a paste which is used for massage, to regain muscular strength. Basil seeds soaked in water are consumed before lunch and dinner every day for at least 16 days. Eating basil seeds keeps the blood pressure even. Seed oil/paste mixed with lemon juice is applied topically. Essential oil from the plant is directly used to massage the forehead to relieve acute migraines. The treatment duration varies according to individuals and upon the severity of migraine. Add a little honey to the paste of 10 basil seeds and lick slowly. A spoonful is sufficient to restore the voice Basil seed paste mixed with water is a good tonic for women and its regular use keeps them free from the disorders of the female generative organs. Seeds are dried and crushed into powder and taken orally with milk or lukewarm water twice a day for 3-4 weeks to dissolve kidney stones and treatment of urinary disorders (a) To a little basil seed powder add a few drops of lime-juice and apply on the affected area. (b) Grind 20gms of basil seeds with a clove of garlic and apply the paste on the affected area daily for 10 days. It is also advised to chew 10 basil leaves every morning, afternoon, and evening or licking a mixture of basil seeds powder and honey in addition to the local application. The seeds soaked in water are mixed with milk and sugar/ honey and taken orally to relieve constipation immediately Also called as basilicon, basil seed paste applied to the place bitten snakes or stung by a wasp or scorpion, it speedily draws the poison to it. Massage the itching areas with the paste of basil seeds. In chronic cases, make a massage oil by mixing two parts of basil juice with one part of sesame/mineral oil and warming over a water bath; cool and store in a bottle. Use this oil for itches of any type for local relief. Add two teaspoons of basil seed powder to 50ml of radish juice; sweeten with a little jaggery (raw sugar). Drink this juice twice or three times a day for a month for total relief. Massaging the body daily with seed oil helps relieve epilepsy. During loss of consciousness during an attack, grind 11 leaves of basil, add a pinch of salt to it and instill few drops of this juice in the nostrils of the patient. Seed powder is mixed with oil to form paste which is used to treat skin problems such as blisters and pimples. The seed extract is mixed with mustard oil and paste is applied for a month daily. The seeds are dried, crushed into powder and mixed with ghee to make paste which is applied on affected portion externally for treatment of rheumatism. A paste of basil leaves is mixed with the regular hair oil. The mixture is applied to the scalp, left for 30 minutes and then shampoo as usual. A little tincture of camphor is added to the juice of 10 basil leaves. Instill a drop or two in the ear for instant relief. Leaf paste or decoction orally taken by adults with molasses twice a day for 3-4 days for expulsion of round worms.

Table 2: Ethnobotanical practices of *Ocimum basilicum* L. by leaves

Formulation method	Disease treated	Treatment procedure
Paste/ juice/ decoction	Blood Purifier Fever/Flu Cataract Cough Burns and wounds Sore throat Diarrhoea Indigestion Boils Warts Eye troubles Hysteria	<ul style="list-style-type: none"> Basil leaves are eaten raw by many as it helps to purify blood from toxins and prevents outbreaks of pimple and acne. Boil about 10 g of basil leaves in 250 ml water till the water is reduced to 125 ml, then add a little rock salt to taste. This tea produces immediate sweating and relieves the fever. An option is to drink tea made of basil leaves, black pepper, and candy sugar. Honey mixed with the juice of basil leaves is applied over the eyes every morning and evening. Fresh cases are dissolved without surgery. 8-10 fresh basil leaves are boiled in 300-500ml of water for 5-6 minutes. The water is allowed to cool and then consumed. It acts as an excellent cough syrup. 5-10g of dry basil leaves mixed in lukewarm water also serve the same purpose. Basil leaves are boiled with coconut oil together for few minutes and then applied on burnt skin after it is cooled.

	<ul style="list-style-type: none"> • The extract of leaves is taken thrice a day for 7-10 days for treatment of sore throat. • The dried leaves are crushed and taken with milk/water is an immediate treatment of diarrhoea. • The leaves are made into fine powder and decoction prepared, decoction of one cup is taken twice a day for 2-5 days for treatment of indigestion. • Paste of dry basil leaves is applied on boils to help cure the infection and rapid healing. • Rub basil leaves on the nub daily and cover with bandage for 1 week. • The juice of basil leaves mixed with honey is recommended for all sorts of eye troubles associated with pain and burning sensation. The mixture may be stored in an air-tight bottle. In the case of trachoma, grind ten leaves of basil with a clove and apply to the eyes every four hours. For swelling of the eyes, the juice of the leaves of basil with a pinch of alum applied to the eyes is prescribed. • Smell the crushed leaves of basil and drink the juice of five basil leaves.
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Table 3: Ethnobotanical practices of *Ocimum basilicum* L. by whole plant

Formulation method	Disease treated	Treatment procedure
Paste/ Juice/ Decoction	Joint Pain Skin sores Eczema Lethargy Male sexual problems Malaria Paralysis/ hemiplegia Pneumonia	<ul style="list-style-type: none"> • Paste of seeds and leaves boiled in mustard oil is used to treat cysts of feet and hands, also rubbed against joint pains. • The whole plant is dried and crushed and powder is mixed with mustard oil to make paste which is applied on affected portion externally for treatment of skin sores • Being a good source of vitamin C, a paste of the leaves, seeds or essential oil can be used topically on the affected area to boost skin cell metabolism and maintain skin collagen. • The tea made from dried basil plant is an instant pick-me-up and drunk regularly, keeps one free from colds and other ailments associated with phlegm in the body. • The regular consumption of basil maintains an even blood pressure and keeps a man's surges well within control, making him neither lecherous nor impotent. Venereal diseases are said to be cured with the use of basil juice in combination with cardamom and yogurt drink. Further, the stalk of the basil plant worn around the waist prevents lower-back pain and maintains sexual health. • Grind 1gm of black pepper in 10 g of basil juice and administer at two hour intervals for 5 to six days. In addition give the patient basil tea. The fever along with the malarial symptoms will be totally relieved in a couple of days. This treatment should be effective in dengue too. • Massage the affected limbs with the oil of basil. The internal intake of the juice is also recommended. • Rub the oil of basil on the chest of the patient and give internally the juice of of basil plant mixed with a little ground black pepper at six hourly intervals. This will induce sweating and relieve the patient.

Table 4: Ethno botanical practices of *Ocimum basilicum* L. by flowers

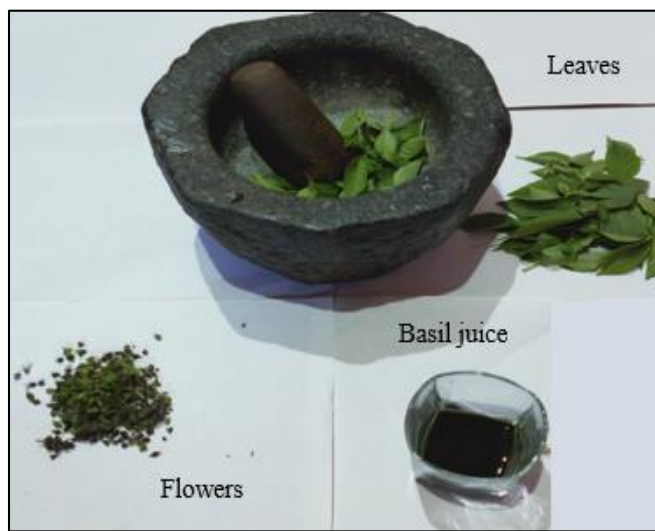
Formulation method	Disease treated	Treatment procedure
Powder/ Paste/ Decoction	Skin Inflammation Migraine Acidity Stones (bladder) Nose-bleeding (epistaxis)	<ul style="list-style-type: none"> • Flowers after drying are made into powder, mixed with mustard oil/olive oil and applied on skin daily. • The flowers are made into fine powder, about 3-4 g of this powder is applied on the forehead 3-4 times a day. • Dried flowers of basil are grinded with black salt. A level tablespoon of this powder is taken orally with water in morning and evening. The acidity is removed from the body with sweat and urine. • Make the patient sit on a steam bath prepared with about 100 g of basil blossoms to a liter of water. Continue treatment daily for a week. Depending on the size and nature of the calculii, they should dissolve and be flushed out with the urine. • Keep some basil blossoms with you and smell them every now and again. In chronic cases, put a drop of the essence of basil blossom in the handkerchief and smell at intervals. It cures the problem almost totally. Drinking basil juice with honey is also recommended.

Table 5: Ethnobotanical practices of *Ocimum basilicum* L. by stem

Formulation method	Disease treated	Treatment procedure
Paste/ Decoction	Warts Urinary troubles Teething	<ul style="list-style-type: none"> Essential oil of the stem is rubbed on warts for a week daily at morning and bed time, followed by rubbing with a cotton ball soaked in apple cidar vinegar. Soak overnight about a teaspoonful of stem paste in water, add sugar and drink in two doses-- morning and afternoon. A week' s treatment should clear up all symptoms. The stem is rubbed down and given with honey to children when teething.

Table 6: Ethnobotanical practices of *Ocimum basilicum* L. by roots

Formulation method	Disease treated	Treatment procedure
Powder/ Paste/ Decoction	Joint pain Tuberculosis	<ul style="list-style-type: none"> For joint pain root (dried/fresh) is grinded and is applied on the joints. Grind 5 g each of basil roots and black pepper and mix with a spoon of honey. The patient should take this twice daily for about two months. In the winter, a little ginger juice and a pinch of salt may also be added. Externally, a mixture of basil and ginger juice may be rubbed over the chest.



Preparation of formulations for different treatments



Collection of information from different sources.

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