

## SURVEY ON MEDICINAL SPICES OF THE NILGIRIS

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**ABSTRACT:** *A survey is made on the medicinal spices of the Nilgiris. Totally, there are 25 species available in various parts of the Nilgiris and they belong to 16 different families of angiosperms. Gudalur, Kothagiri, Kookalthorai, Aruvankadu, Coonoor, Burliar, Masinagudi and Ootacamund are some of the important places in the Nilgiris have a variety of medicinal properties that are put to use in homoeopathic and ayurvedic preparations.*

### INTRODUCTION

Almost all aromatic vegetable products are included under spices. They played a major role in developing the human progress, changing the course of history and geography and promoting international relationship. Spices cannot be grouped as foods, because they have very little nutritive value. They do however, give a pleasant flavour to food and add greatly to the pleasure of eating. They stimulate the appetite and increase the flow of digestive juices and therefore, spices can be safely called the food accessories or food adjuncts (Pandey 1978).

Spices and condiments have no clear definitions. But, they are often combined together and defined in the following way as per the rules of International Organization for Standardization: To such natural plant or vegetable products or mixtures thereof in whole or ground form, as are used for imparting flavour, aroma and piquancy to and for seasoning of foods (Sambamurthy and Subramanyam, 1989).

Spices are being used in many ways. Due to the presence of volatile oils, they have

antiseptic and preservative properties. They form an important class of vegetable matter, used in cooking, confectionary and preparation of beverages. Medicinally they are used as carminatives, bactericides and antiseptics and also to conceal the unpleasant taste of some drugs. They play an important role in many industries, because they have a wide variety of use.

The Nilgiris District is located in a corner of Tamil Nadu State at the juncture of the Eastern and Western Ghats. It is bounded on the west by Kerala, on the North by Karnataka, and on the South-East by Coimbatore District. It includes the plateau, the jungle-clad slopes of the uplands and some adjoining lowland tracts. For administrative purposes, the district is divided into four taluks, namely Gudalur, Ootacamund, Coonoor and Kothagiri Taluks.

The Nilgiris District extends over a small area of 982 sq. miles. It lies between 11<sup>0</sup>10' and 11<sup>0</sup>30' of the Northern latitude and between 76<sup>0</sup>25' and 77<sup>0</sup>00' of Eastern longitude. It ranges the elevation from 300

to 2,636m. Even within the district, there are wide differences in topography, climate and soil conditions. By virtue of the geographical position, the district comes within the full influences of South West monsoon from June to August, which is strong in Gudalur taluk and weakens as it proceeds eastwards. The portions which are not influenced by South-West monsoon receive North-East monsoon, which is strong in the places of East of Dodabetta peak range.

The district has a climate with an annual minimum temperature of 49<sup>0</sup>F and maximum of 66<sup>0</sup>F. Four major types of soils are distinguished in Nilgiris, according to the colour of the soil namely, black, brown, yellow and red. The texture of the soil is sandy, clay, loam or sandy loam. All the soils are acidic in nature, except that of Masinagudi, where it is found to be neutral. The flora and fauna of the Nilgiris are well

known today in spite of their extreme diversity and complexity. Four major vegetation types are distinguished in Nilgiris and they are the moist evergreen forests, dry deciduous forests, shoals and grass lands.

In the Nilgiris, there were, and still are, four main tribes, namely, Todas, Kodas, Irulas and Kurumbas. They use some spices mainly for medicinal purposes.

The information on the medicinal spices of the Nilgiris is meager. Therefore, a survey is made on the medicinal spices of the Nilgiris and an integrated account of the medicinal spices of the Nilgiris is given.

## MATERIALS AND METHODS

The medicinal spices were collected from different parts of the Nilgiris and identified. They were, then, classified (Table I).

**TABLE I**  
**List of medicinal spices of the Nilgiris**

S. No.	Name of the Spice	Botanical Name	Family
1	Ginger	<i>Zingiber officinale</i>	Zingiberaceae
2	Turmeric	<i>Curcuma longa</i>	Zingiberaceae
3	Sweet Flag	<i>Acorus calamus</i>	Araceae
4	Garlic	<i>Alium sativum</i>	Liliaceae
5	Cinnamon	<i>Cinnamomum zeylanicum</i>	Lauraceae
6	Curry leaf	<i>Murraya koenigii</i>	Rutaceae
7	Mint	<i>Mentha spicata var. viridis</i>	Labiatae / Lamiaceae
8	Bay leaf	<i>Laurus nobili</i>	Lauraceae
9	Basil	<i>Ocimum basilicum</i>	Labiatae/Lamiaceae
10	Clove	<i>Syzygium aromaticum</i>	Myrtaceae
11	Cardamom	<i>Elettaria cardamomum</i>	Zingiberaceae

12	Fenugreek	<i>Trignoella foenum-graecum</i>	Fabaceae / Papilionaceae
13	Black mustard	<i>Brassica nigra</i>	Cruciferae / Brassicaceae
14	Poppy	<i>Papaver somniferum</i>	Papaveraceae
15	Pomegranate	<i>Punica granatum</i>	Punicaceae
16	Nutmeg	<i>Myristica fragrans</i>	Myristicaceae
17	Mace	<i>Myristica fragrans</i>	Myristicaceae
18	Black pepper	<i>Piper nigrum</i>	Piperaceae
19	Long pepper	<i>Piper longum</i>	Piperaceae
20	Chilly	<i>Capsicum annum, I. Var.acuminatum</i>	Solanaceae
21	Coriander	<i>Coriandrum sativum</i>	Apiaceae
22	Cellery	<i>Apium graveolens</i>	Apiaceae
23	Star Anise	<i>Illicium verum</i>	Magnoliaceae
24	Fennel	<i>Foeniculum vulgare</i>	Apiaceae
25	Dill	<i>Anethum sowa</i>	Apiaceae

## OBSERVATION AND DICUSSION

Almost all the parts of the plant bodies are used as spices. In other words, spices are obtained from the buds, flowers, fruits, seeds, barks, leaves, stems, roots and underground parts. In view of the difficulty is distinguishing the spices and other flavouring materials, they are studies on a morphological basis, i.e., the nature of the plant part utilized (Hill, 1979). Therefore, spices are classified as shown below:

- A. Spices obtained from roots and other underground parts.
- B. Spices obtained from barks
- C. Spices obtained from leaves.
- D. Spices obtained from flower buds.
- E. Spices obtained from seeds.
- F. Spices obtained from fruits.

## **(A) Spices obtained from roots and other underground parts :**

### **(1) GINGER:**

Ginger is one of the most important medicinal spices, obtained from rhizome. The ginger plant is *Zingiber officinale* Rosc. (Zingiberaceae). It is a native of South East Asia. It is grown in Mexico, Jamaica, China, Japan, Nigeria, Taiwan, Australia and India. In India, it is cultivated in Tamil Nadu, Kerala, Karnataka, West Bengal, Uttar Pradesh, Maharashtra, Himachal Pradesh, Madhya Pradesh and Andhra Pradesh (Umrao Singh et al., 1983) > In India, the largest area is in Kerala State. In the Nilgiris cultivated in small scale in Gudalur and Kooalthorai. It is extensively cultivated in small kitchen gardens.

It is an erect perennial herb with thick rhizomes. Rhizomes are used as spices; they are pale in colour externally and a greenish yellow inside. They contain starch, gums, essential oils, oleoresin and gingerin. The main constituent is starch (50%). The aromatic odour is due to the present of essential oils, while the pungent taste is due to presence of gingerone in the oleoresin.

Ginger is a very good digestive stimulant and carminative. It is used medicinally for curing stomach disorders, piles, pulmonary diseases, tooth-ache, stomach-ache and head-ache.

### **(2) TURMERIC**

Turmeric is *Curcuma longa*, L. (Syn. *Curcuma domestica*, Valet). (Zingiberaceae) which is a native of China and East Indies. It is growing in India, China and West Indies. It is a perennial herb, and it is very popular in India. In India, it is chiefly cultivated in Tamil Nadu, Maharashtra, Bengal, Andhra

Pradesh, Orissa, Karnataka and Kerala. In Tamil Nadu, it is mainly cultivated in Periyar and Coimbatore Districts. In the Nilgiris, it is cultivated in Burliar and Gudalur.

Rhizomes are short and thick; they are used as spices. They are used medicinally for skin diseases, sprains and bruises. They are also used as stimulant and tonic.

### **(3) SWEET FLAG:**

Sweet Flag is *Acorus calamus*, L. (Araceae). It is a marshy, aromatic herb, growing in Europe, Asia, America and India. It is commonly found throughout India. In the Nilgiris, it is grown in Kothagiri, Coonoor and other places.

Rhizomes are used as spices. They are also used medicinally in epilepsy and other mental disorders, chronic diarrhoea, dysentery and tumours. Calamus oil (Sweet flag oil) is extracted from the rhizomes and it is also used medicinally.

### **(4). GARLIC:**

Garlic is *Allium sativum*, L (Liliaceae). It is a perennial herb, which is a native of Southern Asia or the Mediterranean region. It is cultivated as an annual in India, China and Egypt. In India, it is grown all over the country during colder months. In the Nilgiris, it is cultivated in all the places.

Bulb is used as a spice. It is also well known as a popular folk medicine. In ancient Indian medical literature, garlic has been documented as a curative agent for many diseases. It is used for reducing fat, gas trouble, stomach disorders, fever, cough, nervous disorders, pulmonary diseases, asthma, rheumatic pains, etc. The characteristic odour of garlic is due to allicin

(Diallyl disulphide), which has antibacterial, antifungal, antiviral and antitumour properties. It is a powerful drug against amoebic dysentery. Garlic can be used to manufacture an insecticide, which has no side effects. The garlic may also help to slow the formation of blood clots, that can trigger strokes and heart attacks in human beings. The garlic possesses a broad spectrum of antifungal and antibacterial activity and it is heat labile (Sharma and Prasad, 1960). Its juice is applied to skin diseases and also used as ear-drops. Recently it has been reported that it could cure cancer disease.

## **(B) Spices obtained from barks:**

### **CINNAMON:-**

Cinnamon is obtained from the bark of *Cinnamomum zeylanicum*, Breyn. (Lauraceae). The plant is an evergreen tree with aromatic leaves and roots. It is one of the oldest known spices. It is native of Sri Lanka and hence it is often called Sri Lanka Cinnamon. The tree is grown in Sri Lanka, India, Burma, China and Malaya. In the Nilgiris, it cultivated in Gudalur and Burliar.

It is used in medicine as a carminative and stimulant. The bark yields an essential oil. Cinnamon bark oil is used for flavouring medicines, sweets and liquors. The cinnamon bark leaf oil is antiseptic and it is a common adulterant of cinnamon bark oil. Cinnamon bark contains cinnamon aldehyde (60%), eugenol (10%) and other substances.

## **(C) Spices obtained from leaves:-**

### **1. CURRY LEAVES:-**

Curry leaves are the leaves of *Murraya konigii* (L). Spreng. (Rutaceae). The tree is cultivated through India. In the Nilgiris, it is

grown in Aruvankadu, Coonoor, Kothagiri, Gudalur and other places. Tender leaves are used in dysentery and diarrhoea.

### **2. MINT: -**

Mint (Spearmint or Garden mint or Lamb mint) leaves are obtained from *Mentha spicata* var. *viridis*, L. (*Lamiaceae* or *Labiatae*). The aromatic herb is a native of Europe. It is widely cultivated throughout India, particularly in Punjab, Uttar Pradesh, Maharashtra, Tamil Nadu and Kashmir. In the Nilgiris, it is cultivated in all the places.

The leaves are stimulant and caminative. The spearmint oil is extracted from the leaves and used for medicines.

### **3. BAY LEAF :-**

Bay leaves are obtained from *Laurus nobilis*, L (Lauraceae). The plant is a small tree, which is a native of Asia Minor. It is found in France, India and other countries. In the Nilgiris, it is common is Gudalur, Coonoor, Kothagiri and other places.

Leaves and fruits are aromatic and also medicinal. An essential oil is extracted from the leaves and used in perfumery. Seeds are the source of an aromatic fat, used in medicines for diarrhoea and dropsy.

### **4. BASIL :-**

Basil leaves are obtained from *Ocimum basilicum*, L (*Lamiaceae* or *Labiatae*). The plant is a small shrub, native of India Africa. It is grown in India, Africa, England, France and California. It is cultivated throughout India. In the Nilgiris, it is found in Burliar, Masinagudi and Gudalur.

The whole plant is medicinal and used as expectorant, carminative and stimulant. Seeds are used in dysentery and diarrhoea.

#### **(D) Spices obtained from flower buds:**

##### **CLOVE:**

Cloves are one of the most important and useful spices. They are the dried, unopened flower buds of *Syzygium aromaticum* (L.) Merr. & Perry (Syn. *Caryophyllus aromaticum*, L; *Eugenia caryophyllata*, Thunb.; *Eugenia aromatica*, Kuntze) (Myrtaceae). The shape of the bud is nail-like.

The plant is a small, conical evergreen tree. It grows in Zanzibar, Indonesia, Mauritius, West Indies and Srilanka. In South India it is cultivated in the Nilgiris (Gudalur and Burliar), Tenkasi Hills, Kanyakumar and Kerala (Kottayam and Quilon). The value of cloves is due to the presence of essential oil content (free eugenol 70 – 90%, eugenol acetate and caryophylline). It is antiseptic in nature and used for tooth ache. It is also used in certain tooth pasts and for mouth washing.

#### **(E) Spices obtained from Seeds:-**

##### **1. CARDAMOM :**

Cardamom is one of the most important and ancient spice crops of India. The highly aromatic seeds and fruits of *Elettaria cardamomum*, Maton. (syn. *Cardamomum officinale*, Salisb.: *Amomum cardamomum*, L.) (Zingiberaceae) from cardamom. It is also called the “Queen of spices”.

The plant is a herbaceous perennial, which is a native of South India. It is cultivated in India, Sri Lanka, Java and Central America.

In India, it occurs both in wild and cultivated conditions in Karnataka, Kerala, Tamilnadu and Sikkim. In the Nilgiris, it is grown in Burliar and Gudalur. The seeds are light coloured with a delicate flavour. They are used in medicines and beverages. Tincture of cardamom is used in medicine.

##### **2. FENUGREEK**

Fenugreek is *Trigonella foenumgraecum*, L.(Fabaceae). The plant is an annual herb, which is a native of Southern Europe and it is common in India and Pakistan. In India, it grows mainly in Punjab and Tamilnadu. In the Nilgiris, it is grown in all the places.

Seeds are pale yellow in colour and used as a spice. They contain an alkaloid, trigonelline and therefore, they are used medicinally as carminative and tonic. They also contain a steroidal substances, diosgenin, which is important in pharmaceutical industries for the production of sex hormones and oral contraceptives. Fenugreek seems to be next to *Dioscorea* sp. as a source of diosgenin.

##### **3. BLACK MUSTARD**

Black mustard is one of the ancient and well known spices of India and it is obtained from the seeds of *Brassica nigra* (L.) Koch. (syn. *Sinapis erysimoides* or *Cruciferae*). The plant is a small, annual herb, which is a native of India and Eurasia. It is cultivated in Bihar, Madhya Pradesh, Rajasthan, Orissa, Tamil Nadu, Punjab, West Bengal, Assam and Uttarpradesh. In Nilgiris, it is grown in all the places.

The mustard seeds are small and round; they are used in medicines. The mustard oil is extracted from the seeds and it is also used in drugs.

#### 4. POPPY

Poppy is obtained from the seeds of *Papaver somniferum*, L. (Papaveraceae). The plant is an annual herb with large white flowers and it is a native of Western Asia. It is cultivated extensively in India, China, Turkey, France, Germany, U.S.S.R., Pakistan and Japan. In India, it is grown in Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab and Tamil Nadu. It is grown in all the places of the Nilgiris District.

Opium is the dried milky white juice (latex) obtained from immature capsules of the plant. Crude opium is brown in colour and it has about 25 alkaloids. Morphine, codeine, papaverine and nicotine are important alkaloids. Because of their narcotic and sedative action, opium is used for ulcer, diarrhoea, dysentery, rheumatism and eye diseases.

#### 5. POMEGRANATE

Pomegranate is the fruit of *Punica granatum*, L. (Punicaceae). The plant is a small tree, native to Iran. It is cultivated in Babylon, California, New Mexico and India. In India, it is grown throughout the country. In the Nilgiris, it is common in Coonoor and Kothagiri.

Fruit is a good source of sugars Vitamin C and Iron. Flower buds, roots fruit rind and seeds are used medicinally for dysentery, diarrhoea and bronchitis. Bark is used to expel tapeworms.

#### 6. NUTMEG

Nutmeg is obtained from *Myristica fragrans*, Houtt. (Myristicaceae). The plant is a tall evergreen tree, which is a native of Moluccas. It is cultivated in Moluccas, Trinidad, Penang and Banda islands. In

India, it is grown in Tamilnadu, Kerala, Karnataka, Assam and West Bengal. In the Nilgiris, it is cultivated in Burliar. The kernel of the seed constitutes nutmeg of commerce. Nutmeg butter (fatty oil) obtained from the nutmeg is used as a mild external stimulant in ointments and forms an useful application in rheumatism, sprains and paralysis.

#### 7. MACE

Mace is also obtained from *Myristica fragrans*, Hott. (Myristicaceae). It is the dried, fibrous, coloured aril, covering the testa of seed. It is bright-red in colour, branched and leathery. It is used to improve the appetite and also to cure bronchitis and asthma.

#### (F) Spices obtained from fruits:-

##### 1. BLACK PEPPER:-

Black pepper is the dried unripe fruit of *Piper nigrum*, L. (Piperaceae). It is also called the "King of Spices", because no other spice is better known or more widely used. The plant is a climbing perennial shrub, which is a native of the Western Ghats in India. It is cultivated in India, Indonesia, Malaysia, Sri Lanka, Madagaskar, Brazil and Thailand. In India, it is cultivated in Karnataka, Assam, West Bengal, Tamilnadu, Kerala and Maharashtra. In the Nilgiris, it is chiefly grown in Gudalur.

The aromatic odour of pepper is due to the oil, while the pungent taste is due to the main alkaloid, piperine. It stimulates the flow of saliva and the gastric juices and has a cooling effect. It is used in medicine for fever, sore throat, piles, etc.

## 2. LONG PEPPER

Long pepper is obtained from the fruits of *Piper longum*, L. (Piperaceae). It is a native of India, Sri Lanka and Philippine islands. In India, it is cultivated in Assam, Bengal, Karnataka, Kerala and Tamilnadu. In the Nilgiris, it is grown in Gudalur. Roots and fruits are used for respiratory diseases.

## 3. CHILLI:-

Chilli is obtained from the fruits of *Capsicum annuum*, L. var. *acuminatum* (Solanaceae). The plant is a herb, which is a native of tropical America and West Indies. In India, it is cultivated throughout the country. In the Nilgiris, it is grown in Gudalure and Kookalthorai. The ripe fruits help in digestion. They contain Vitamin A, C and E. The pungent principle is due to the alkaloid, capsaicin, which has good export possibilities (Choudhury, 1967). The fruits are used medicinally to prevent heart attack by dialating the blood vessels. In the form of ointment it is applied to painful joints in rheumatoid arthritis.

## 4. CORIANDER:-

Coriander is a very old flavouring substances, obtained from the fruits of *Coriandrum sativum*, L. (Apiaceae of Umcelliferae). It is a native of the Mediterranean region and is extensively grown in Europe, Morocco, U.S.S.R., Hungary, Rumania, Mexico and South America. In India, it is cultivated in Madhya Pradesh, Maharashtra, Tamilnadu, Karanataka, Andhra Pradesh, Orissa, Rajasthan, Uttar Pradesh and Bihar. It is grown in all the places of the Nilgiris District.

The fruits contain volatile oil, fatty oil, protein, cellulose, pentosans, tannins, calcium oxalate and minerals. They are rich

with Vitamin A. Coriander oil is extracted from the seeds and used for medicines.

## 5. CELERY:-

Celery is *Apium graveolens*, L. (Apiaceae). The plant is a biennial herb, native of Europe. It is cultivated in U.S.A., France, China and India. In India, it is grown in Tamilnadu, Himachal Pradesh, Uttar Pradesh and Punjab. In Tamilnadu, it is cultivated in Udthagamandalam.

The fruits yield an essential oil and it is used medicinally as stimulant and antiseptic. Roots and seeds are also used medicinally as carminative. Decoction of seeds is given for curing rheumatism.

## 6. STAR ANISE:-

Star Anise is *Illicium verum*, Hook.f. (Magnoliaceae). The plant is a small evergreen tree, which is a native of South China. In the Nilgiris, it is cultivated in Burliar.

The oil is used in medicine as a carminative, expectorant and flavouring material.

## 7. FENNEL:-

Fennel is obtained from the fruits of *Foeniculum vulgare*, Mill. (Apiaceae). The plant is a tall, perennial, aromatic herb, native of South Europe. It is cultivated throughout the world. In India, it is grown in Punjab, Assam, Maharashtra, Gujarat, Haryana, Baroda, Karnataka and Tamilnadu. In Tamilnadu, it is cultivated in Udthagamandalam.

The seeds are medicinally used as carminative and stimulant. Fennel oil is extracted from the fruits and seeds and it is used in medicines.

## 8. DILL

Dill is obtained from the fruits of *Anethum sowa*, Kurz. (Syn. *Peucedanum graveolens*, L.) (Apiceae). It is also commonly known as cake seed. The plant is a small herb, native of Eurasia. It is cultivated in U.S.A., Hungary, Germany, India, Holland and England. In India, it is cultivated in Jammu, Kashmir and Tamilnadu. It is distributed all over the Nilgiris.

The fruits are medicinally used as a carminative. Dill oil is extracted by distillation of leaf, stem and seed. The principal constituent of dill oil is carvone (Anup Kumar and Ashok Sharma, 1981). A

mixture of dill oil, alcohol and water is a common domestic remedy for the gas troubles in children.

Totally 25 spices are available in the Nilgiris and this represents about 50% of the total spices available in India. They show various habits such as herbs, shrubs, trees and climbers. They belong to 16 different families of angiosperms. The spices have nutritive value also.

Almost all the spices have variety of medicinal properties that are put to use in homoeopathic and ayurvedic preparations. Therefore, the spices of the Nilgiris have a bright future both in domestic and export markets.

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