



Documentation of fleshy spices in daily nutrition

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Abstract

Spices are the important part of our daily nutrition but also part of herbal medicine throughout world. Indian spices are integral part of Indian cuisines and culture with rich history dating back thousands of years and known as the 'Land of spices.' The country produces a wide variety of spices ranging from the commonly used cooking coriander and turmeric to the more exotic cardamom, saffron and pepper. Present work deals with the use of different kinds of spices in daily nutrition. *Allium cepa*, *Allium sativum*, *Coriandrum sativum*, *Cymbopogon citratus*, *Capsicum annum*, *Capsicum frutescens*, *Mentha arevensis*, *Murraya koenigii*, *Piper nigrum*, *Pandanus amaryllifolius*, *Tamarindus indica* and *Zingiber officinale*. Total 14 species belong to 11 genus and 10 families were documented. dominant families include Solanaceae represented by (03) species followed by Liliaceae and Zingiberaceae (02), Apiaceae, Fabaceae, Lamiaceae, Rutaceae, Piperaceae, Pandanaceae and Poaceae by one species each. Plant parts like rhizome, bulb, leaves, unopened flower bud, fruit and seeds were used as spices respectively. All over the world people are constantly using spices in daily cooking as well as in traditional medicine.

Keywords: Documentation, bulb, leaves, spices, shivamogga, seed, rhizome

Introduction

Aromatically scented herbal products have been used since ancient times to flavor foods and for preparing perfumes and incenses. A spice can be broadly defined as a tropical herbal plant or a specific part of it that is valued for providing color and aromatic flavoring along with stimulating odor for use in cooking and in condiments, as well as in candies, cosmetics, fragrance and medications. (Gupta, 2010) [4]. The food style or habit of people is changing to greater extent as they are moving towards spicy food because of good taste and aroma. The uses of spices have been practiced in the Indian subcontinent since time immemorial and is still relevant today due to the importance of spice and its therapeutic properties. As India is blessed with a varied climate each its states produce some spice or other. Spices are natural plant products that are seed, fruit, root, bark or other plant substance primarily used for flavoring, coloring or preserving food (Ruchi Bhattacharya *et al.* 2021).

The use of both dry and fleshy spices including root, rhizome, bark, seed, fruit and flower bud. These are essential aromatic plant products used to enhance flavor, color, and herbs for their flavoring, preservation and health promoting properties that have been known since ancient times. Early records indicate that they were used as medicinal in ancient Egypt and Assyria and has food preservatives in ancient Rome and Greece. Spices and herbs, commonly known as aromatic plants, are an important group of agriculture they add flavor, taste and nutritional value [Hamdy and Shaaban 2020] [7]. Spices always play a prominent role in kitchen as well as in certain medicinal cavity like diuretics. Ecoprotic carminative aperients, expectorant and many more. Spices have been being used medicinally since early. Spices are being used as revile for health in many diseases, for example coriander turmeric, cumin and other diseases. Traditionally spices as part of diets have holistic effects on human health. in Indian kitchen, all spices are used from ancient time in daily food

as well as used in traditional manner [Vinod Kumar 2020] [8].

Spices and herbs are most commonly using to enhance the sensory properties of food since the ancient time as they contain compounds which are responsible for unique seasoning properties. Not only for this domestic cooking and food industry but also for pharmaceutical, cosmetics industries spices are an essential part. Spices contain an ample amount of bioactive compounds that are responsible for medicinal and antioxidative properties, and it helps to alter the shelf life of foods by reducing the oxidation reactions and also act as an antiaging agent and reduce the risk of non-communicable diseases as it is consumed by human. (Dr. Udara; Arachchige *et al.*, 2021). Spices have been used for hundreds of years in cooking and medicine. They add a wide range of flavors to food and may also provide health benefits. For some people, using herbs and spices in cooking may be a challenge (Cantwell 2001). Spices have been used for not only flavor and aroma of the foods but also to provide antimicrobial properties (Nanasombat *et al.*, 2002).

The WHO has listed 21,000 plants, which are used for medicinal purpose around the world. Among these 2,500 species are in India, out of which 150 species are used commercially on a fairly large scale. India is the largest producer of medicinal herbs and is called as botanical garden of the world. (Ranu prasad *et al.*, Jan 2017). Spices are used for various purposes and besides seasoning food; are used in perfumery, cosmetics and medicines. The spices board of the govt of India has categorized the spices into 52 kinds and 5 broad categories in terms of their origin and features. The categories include major seed, tree, herbal and others. These 52 spices are distributed amongst these categories (Senthilkumar and Amudhavalli 2007). All the spices of India are closely connected to the culture, traditions and preservation since early human history for India's external trade spices were a key component such as

Egypt Arabia and China. The clove finds a mention in the Ramayana one of the prestigious holy book of Hindus as well as in the writings dating back to 1st century Ad of the roman empire [Ankith Shukla and Nagendra Yadav 2018] [9].

Indian spices are integral part of Indian cuisines and culture with rich history dating back thousands of year India is known as the land of spices and for good reason the country produces a wide variety of spices ranging from the commonly used cooking coral and turmeric to the more exotic cardon saffron and fenugreek. These spices are not only used for cooking but also for medicinal purposes. Spices are more than just flavor enhances for our food. [Megha Takur & Yansh Agrawal 2024]. Spices have played a dramatic role in the history of India. The delightful flavor and pungency spices make them indispensable in preparation of palatable dishes due to their color aroma and flavor characteristic spices used in culinary, cooking and spices based on pharmaceuticals can be leaf buds, bark, rhizome, berries even stigma of flower. It can be used fresh, dried, whole, chopped or ground in the preparation of food and drinks [T. J. Zacharah 2020]. The therapeutic efficacy of these individual spices for specific pharmacological actions has also been established by experimental and clinical studies. The medicinal effects traditionally ascribed to Indian spices are validated by modern pharmacological and experimental techniques, thus providing a scientific rationale to their traditional therapeutic usage. Present work deals with the reference to the use of different kinds of spices in daily nutrition, culinary and medicinal properties with following aims and objectives,

Aims and Objectives

- To classify fleshy spices based on their botanical characteristics
- To understand the morphological features of fleshy spices

- To study the culinary uses and importance in food preparation
- To explore their role in traditional and modern medicine

Materials

Different types of dry spices, from household and local market, camera, laptop etc.

Methods

The present work has been taken out to explore and document fleshy spices and their uses in Shivamogga Karnataka. For this, regular visits were conducted between November 2025 to March 2026. Information collected regarding uses of spices in cooking and preparation of medicine.

Data Collection

fleshy Secondary data gathered from books, research article. Information regarding cooking, medicinal uses were recorded. A comparative study was done to identity variation between the spices.

Results and Dicussion

Present work deals with the use of different kinds of fleshy spices in daily nutrition. *Allium cepa*, *Allium sativum*, *Coriandrum sativum*, *Cymbopogon citratus*, *Capsicum annum*, *Capsicum frutescens*, *Mentha arevensis*, *Murriya koenigii*, *Piper nigrum*, *Pandanus amaryllifolius*, *Tamarindus indica* and *Zingiber officinale*. Total 14 species belong to 11 genus and 10 families were documented. dominant families include Solanaceae represented by (03) species followed by Liliaceae and Zingiberaceae (02), Apiaceae, Fabaceae, Lamiaceae, Rutaceae, Piperaceae, Pandanaceae and Poaceae by one species each. Plant parts like rhizome, bulb, leaves, unopened flower bud, fruit and seeds were used as spices respectively.

Table 1: Fleshy spices used in daily nutrition

Sl No.	Common Name	Scientific Name	Family	Part Used	Uses
01	Onion Erulli	<i>Allium cepa</i>	Liliaceae	Bulb	Act as foundational aromatic base and used in almost all vegetarian and non- veg curries, soups, sauces and dishes.
02	Garlic Belluli	<i>Allium sativum</i>	Liliaceae	Bulb	Aromatic base and used in almost all vegetarian and non- veg curries, soups, and dishes.
03	Red chili Menashinkai	<i>Capsicum annum</i>	Solanaceae	Fruit	Used for hot sauces, add heat, color and flavor
04	Bird's eye chili	<i>Capsicum frutescens</i>	Solanaceae	Fruit	Dipping sauces and condiments, marinades paste.
05	Turmeric Arashina	<i>Curcuma longa</i>	Zingiberaceae	Rhizome	It is a cornerstone of global spice blends and savory recipes. It added to roasted vegetables, lentils (<i>dals</i>), and bean stews to build an earthy flavor base. Used milk called as golden milk and plenty of curries, masalas and marinades.
06	Tamarind Hunase	<i>Tamarindus indica</i>	Fabaceae Caesalpiniaceae	Fruit Seed Leaves	It is a versatile sweet so fruit used globally in plants concentrates and powder to add tanginess to savory and sweet dishes it is essential for chutneys curries noodle dishes. Tender leaves are chewed, fresh raw leaves and fruits made into chutneys.
07	Biryani leaves	<i>Pandanus amaryllifolius</i>	Pandanaceae	Leaves	Pulverized leaves yield a vibrant emerald-green juice used as a natural dye and flavouring for traditional dishes. It acts as an excellent complement for vanilla and can make non-fragrant rice smell like <i>basmati</i> , Biryani and Palav.
08	Mint leaves/ Pudina	<i>Mentha arevensis</i>	Lamiaceae	Leaves	a versatile aromatic herb, used for elevating summer salads, balancing rich curries, blending into vibrant sauces, and flavoring refreshing beverages.
09	Curry leaves/	<i>Murriya koenigii</i>	Rutaceae	Leaves	Fresh or dried leaves are fried in hot oil or ghee along with

	Karibevu	(L.) Spreng			spices. Essentially used to many regional prawn, fish, and chicken curries, as well as tempered rice dishes like <i>poha</i> (flattened rice) and <i>lemon rice and curries</i> .
10	Lemon grass	<i>Cymbopogon citratus</i> (DC) Stapf.	Poaceae	Leaves	Fresh, fibrous herb with a bright, citrusy flavor. It is primarily used to add a fragrant, zesty kick to dishes like curries, stir-fries, and soups. It also flavors marinades, dipping sauces, and teas
11	Coriander leaves Kotambari	<i>Coriandrum sativum</i> L.	Apiaceae	Leaves Seeds	The fresh, vibrant green leaves and finely chopped stems are widely used all over the world. They used as a garnish for soups, tacos, curries, and salsas. Used in all vegetarian and non- veg curries, soups and dishes
12	Pepper Menasu	<i>Piper nigrum</i> L	Piperaceae	Fruit seed	It is a foundational ingredient in pre-mixed seasonings like curry powder and Cajun rubs. Freshly ground pepper is added at the end of cooking or tableside to preserve its volatile aromatics. It is a staple for salads, eggs, soups, and steaks.
13	Ginger Shunti	<i>Zingiber officinale</i> Rosae.	Zingiberaceae	Rhizome	It adds savory cooking, grated or julienned fresh ginger is a staple for stir-fries, marinades, and curries. In baking and beverages, it provides a spicy kick to cookies, cakes, teas, veg & non-veg curries
14	Bell pepper	<i>Capsicum annum</i>	Solanaceae	Fruit	Used as vegetable and for garnishing in Pizza and burgers. curry are made and eaten with rotis.



Fig 1: *Cymbopogon citratus*



Fig 2: *Piper nigrum*



Fig 3: *Coriandrum sativum*



Fig 4: *Allium sativum*



Fig 5: *Zingiber officinale*



Fig 6: *Murriya koenigii*



Fig 7: *Capsicum annuum*



Fig 8: *Allium cepa* L

Some photographs of fleshy spices

Further classification and description with images of individuals fleshy spices as follows,

Ginger

Scientific classification

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order - Zingiberales
Family – Zingiberaceae
Genus - *Zingiber*
Species - *Zingiber officinale* Roscoe

Botanical description

Ginger is a tropical perennial known for its aromatic horizontal rhizome.

Medicinal Uses

Act as digestive aids, highly effective in nausea treatment. Act as Antioxidant and Anti-inflammatory. Blood sugar management. Immunity booster, Cardiovascular health.

Turmeric

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order - Zingiberales
Family – Zingiberaceae
Genus - *Curcuma*
Species - *Curcuma longa* L.

Botanical Description

Turmeric is a tropical perennial with large leaves and thick segmented rhizomes.

Medicinal Uses

Antioxidant and antimicrobial properties. Used to joint pain. Support digestive health
Reduce depression symptoms, Prevention of cancer and Cure skin disease

Garlic

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order – Aspergales
Family – Liliaceae
Genus - *Allium*

Species - Allium sativum L.

Botanical Description

Garlic is a bulbous perennial herb with edible cloves.

Medicinal Uses

Act as antibacterial and antioxidant properties. Reducing blood pressure. Boost the immune system. Preventing cancer. Provide gut health/detoxification.

Onion

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order - Asparagales
Family – Liliaceae
Genus - *Allium*
Species - *Allium cepa* L.

Botanical Description

Onion is a widely cultivated edible bulb with layered fleshy leaf bases.

Medicinal Uses

Skin and hair care, Blood sugar management. Supporting immune system. Increased bone mineral density. Provide gut health and digestion. helps in treating coughs, bronchitis and congestion. Regulate cholesterol level. Preventing blood clot formation
Reducing heart attack risk. Reduce high blood pressure

Mint leaves

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order – Lamiales
Family – Lamiaceae
Genus - *Mentha*
Species - *Mentha arevensis* L.

Botanical Description

Mint is an aromatic herb known for square stems and fragrant leaves.

Medicinal Uses

Improving digestive health, Relieve irritable bowl. Reducing bloating.
It is active component menthol. Treats respiratory issues. It is antimicrobial properties

Curry leaves

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order - Sapindales
Family – Rutaceae
Genus – *Murraya*
Species – *Murraya koenigii* (L.) Spreng.

Botanical description

Curry leaves come from a small tropical evergreen shrub with aromatic pinnate leaves.

Medicinal Uses

It is rich in fibre, iron and antioxidant. Support heart health. Regulating blood sugar level, Manage diabetes. Promote hair growth. Potentially prevent cancer. Primarily used in ayurvedic and traditional medicine. Improve digestive health.

Lemon grass

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order – Poales
Family - Poaceae
Genus - *Cymbopogon*
Species - *Cymbopogon citratus* (DC.) Stapf

Botanical description

Lemongrass is a tall aromatic grass with a strong lemon aroma when crushed.

Medicinal Uses

Act as antibacterial, anti-inflammatory and antifungal agent. Rich in antioxidants, Improves digestion. Supports weight loss. Helps reduce fever.

Coriander leaves

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order – Apiales
Family -Apiaceae
Genus - *Coriandrum*
Species - *Coriandrum sativum* L.

Botanical description

Coriander is a fragrant annual herb used for both leaves and seeds.

Medicinal Uses

Digestive health. Blood sugar management. Immune system support. Pain relief improves heart and skin health. Skin health and antimicrobial activity.

Fleshy pepper

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order – Piperales
Family – Piperaceae

Genus - *Piper*
Species - *Piper nigrum* L.

Botanical description

Piper nigrum is a perennial woody evergreen vine producing peppercorns.

Medicinal uses

Aid digestion by boosting enzymes. Reduce inflammation and pain. It is a active compound. Treats respiratory issues. Cure coughs and cold. Nutrient absorption enhancing properties. Reduce chronic disease. Support metabolic health.

Green chilly

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order - Solanales
Family - Solanaceae
Genus - *Capsicum*
Species - *Capsicum annuum* L.

Botanical description

Green chili is a perennial herb from the Solanaceae family, characterized by woody, angular stems and pungent green fruits.

Medicinal values

Rich in capsaicin. Acts as an antimicrobial agent. Boosts metabolism Provides pain relief. Aids digestion. Supports heart health. Rich in vitamins A and C.

Bird's eye chilly

Kingdom - Plantae
Division - Angiosperms
Class – Dicotyledons
Order – Solanales
Family – solanaceae
Genus - *Capsicum*
Species - *Capsicum frutescens* L.

Botanical description

Bird's eye chili is a small, intensely pungent pepper with slender fruits that ripen from green to bright red.

Medicinal uses

It aids digestion. Relieves joint pains. Boost immunity. Manage blood pressure and cholesterol. Possesses anti-inflammatory and antioxidant properties. Used traditional medicine for diabetes and skin condition

Biryani yele/leaves

Kingdom - Plantae
Division - Angiosperms
Class – Monocotyledons
Order - Pandanales
Family – Pandanaceae
Genus - *Pandanus*
Species - *Pandanus amaryllifolius* Roxb.

Distribution

is natively from the Moluccas Islands) in Indonesia. Today, its distribution is widespread across the wet tropical biomes

of Southeast Asia. In India, it is heavily cultivated for its fragrant, flavouring leaves in coastal regions spanning Gujarat, Goa, Maharashtra, Karnataka (Dakshina Kannada), and Kerala.

Botanical description

An herbaceous perennial that typically grows as a short shrub can reach up to 4.5 meters in larger growth phases. It forms tight clumps supported by woody aerial and stilt roots at its base. Leaves: Unlike other species in the screw-pine genus, *P. amaryllifolius* has smooth, spineless, glossy-green, and strap-like leaves that fan out from stems.

Medicinal uses

Blood Sugar Control: Pandan tea is frequently consumed in traditional medicine to help decrease glucose concentration and manage type 2 diabetes. When soaked in carrier oils (like coconut oil), the leaves serve as an embrocation to relieve rheumatic troubles, arthritis, muscle pain, and headaches. **Digestive Support:** Pandan infusions are used to ease mild digestive discomforts such as bloating, indigestion, nausea, and stomach cramps. **Skin Care & Infections:** Topical applications of crushed leaves are used to provide a cooling effect on minor burns and sunburns, while its antibacterial properties help treat scalp and skin issues.

Conclusion

Spices are aromatic plant products obtained from various parts such as rhizomes, bulb, leaves, fruits and seeds. They have been used since ancient times for flavouring, preservation, and medicinal purposes. Fleshy spices have been traditionally used as an essential ingredient in the preparation of food in many countries, especially in India. They are directly responsible for providing the aroma, flavor, color and taste to the food. Spices not only add taste and flavor to the food but also play an important role in maintaining health from various disease. Traditionally spices as part of the diets have holistic effects on human health. Spices are valuable natural resources that contribute to human health, culture, and economy. These are essential components of daily life due to their culinary and medicinal value. They enhance the taste, aroma and nutritional quality of food while also offering various health benefits.

The study highlights their diverse botanical nature and importance in traditional and modern practices. Although widely used, research on spices is still limited, indicating the need for further studies.

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