



A Review On Indian Spices & Herbs

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Abstract:

India is the largest spice and spice-related exporter. The country continued its upward trend in the years 2020 and 21 and exported spices worth 4.18 billion US dollars, an increase of 34% from 2019 and 20. Spice exports from India experienced a five-year CAGR of 12%. In 2020 and 2021, India shipped spices and spice products to 180 different countries. China, the United States, Bangladesh, Thailand, the United Arab Emirates, Sri Lanka, Malaysia, the United Kingdom, Indonesia, and Germany were the most popular destinations. In 2020 and beyond, these nine destinations accounted for more than 70% of all export earnings. As of recently, there has been an increasing interest worldwide in developing products that have high pharmacological success and little or no side effects for use in pharmaceuticals and the food industry. A few spices and flavors of culinary beginning were remembered for the “endorsed” monographs, like caraway oil, cardamom seed, cinnamon bark, cloves, coriander seed, dill seed, fennel oil, garlic, ginger root, licorice root, mint oil, onion, paprika, parsley spice and root, peppermint oil, rosemary, sage, thyme, turmeric root, and white mustard seed. Different flavors and spices are depicted to have restorative properties in the traditional Indian medication system of Ayurveda and Siddha, such as being antithrombotic, antiatherosclerosis, hypolipidemic, hypoglycemic, mitigating, antiarthritic etc. It is possible to draw the conclusion that Indian spices are the subject of numerous international research studies. Spices not only give food flavor and flavor, but they also help keep people healthy and safe from a variety of diseases.

Keywords: Spices, Herbs, Nutritional importance, medicinal importance, Export, Antioxidants

1. Introduction

As of recently, there has been an increasing interest worldwide in developing products that have high pharmacological success and little or no side effects for use in pharmaceuticals and the food industry. Alexander the incomparable missions in Focal Asia around 330 B.C. are frequently credited for the scattering and reception of spices and flavors among many societies since they presented Asian, Persian, Indian, and Greek societies and thoughts (Parry, 1955). Early records show that spices and flavors were utilized as medications in old Egypt and Asia and as food additives in old Rome and Greece. Spices and flavors kept on being utilized during the medieval times for seasoning, food safeguarding, or potentially restorative purposes (Parthasarathy *et al.*, 2005). In nations like India where neediness and unhealthiness are unrestrained, information on plant determined cell reinforcements and flavors could lessen the expense of medical care. India has a rich history of utilizing different spices, flavors and home-grown parts for treating different sicknesses (Ali *et al.*, 2008).

It has long been acknowledged that certain human disorders, such as cardiovascular disease, can be improved with the help of certain dietary components. For the "endorsed" monographs, some of the earliest culinary flavours and spices were remembered, including the herb caraway oil and seed, cardamom seed, cinnamon bark, cloves, coriander seed, dill seed, fennel and oil and seed, garlic, ginger root, root of licorice, mint oil, the onion, paprika, parsley flavour and root, peppermint leaf and oil, rosemary, sage, thyme, turmeric root, and white mustard seed (Blumenthal, 1999). The utilization of natural medication has soar throughout recent years, with personal expenses assessed at more than \$5 billion in the US alone. The accompanying audit of home-grown drugs influencing the cardiovascular framework depends on data gathered from the logical writing. Most home grown medicinals have numerous impacts regulating the cardiovascular framework (Frishman *et al.*, 2004). Different flavors and spices are depicted to have restorative properties in the traditional Indian medication system of Ayurveda and Siddha, such as being antithrombotic, antiatheroscleroti, hypolipidemic, hypoglycemic, mitigating, antiarthritic, and so on (Srivastava *et al.*, 1995).

Flavors were probably the most important things of exchange the antiquated and archaic world. Cultivator and people specialists have involved plant solutions for hundreds of years, yet as of late have researcher started to concentrate on the powers of normal spices and flavors. Flavors are wealthy in cell reinforcements, and a logical report recommends they

are likewise powerful inhibitors of tissue harm and irritation brought about by elevated degrees of glucose and circling lipids. Because of their phenol content these can impede the arrangement of mixtures that add to harm brought about by metabolic problems. Since flavors have exceptionally low-calorie content and are moderately reasonable, they are dependable wellsprings of cancer prevention agents and other likely bioactive mixtures in diet (**Muthulakshmi et al., 2009**). The significant focal point of this audit is on the job that flavors assume an unavoidable part in the administration of heart sicknesses, filling in as specialists both for avoidance and therapy. In general, the survey recommends "adding flavor to our life" may act as a scrumptious and reasonable method for keeping a solid heart.

2. Spices

Every other part of the plant, including dried bark, roots, berries, seeds, twigs, or anything else that isn't the green leafy part, is considered a spice. Today, India is the world's largest consumer, producer, and exporter of spices.

3. Herbs

The edible parts of herbaceous plants, also known as plants without a woody stem, are called herbs. The most common uses of the word "herb" are in cooking, beauty, and medicine.

3.1 Example: Basil, bay, dill leaves, marjoram, tarragon, thyme

4. Sensory effects of Spices and herbs

Plants with a strong odor and a sharp taste are commonly used in food condiments to enhance flavor, texture, and color. Mustard, nutmeg, ginger, garlic, coriander, and locust bean are typical examples (**Odebunmi et al., 2010**).

Spices and herbs have been shown to have sensory effects on appearance, color, odor, taste, texture, and overall, like (**Sikkhamondhol et al., 2009**). Studied the quality of bread with turmeric powder, turmeric essential oil, and turmeric extracted residue at a concentration of 0.10%. They found that bread with turmeric residue had higher liking scores for texture, appearance, taste, and overall acceptability (**Adedeji et al., 2013**)

Investigated the effects of crude extracts of *Zingiber officinale* and *Aframomum danielli* on the flavor and texture of fried bean cake snacks. According to the outcome, the panelists found that fried bean cake samples containing both spices in concentrations ranging from 0.2 to 1 percent were acceptable in terms of appearance, flavor, texture, favor, and overall quality (**Dhillon et al., 2013**).

The effect of the oregano herb on the rheology of the dough and the quality of the bread was studied, and the result was bread with excellent baking, texture, nutritional, and sensory properties. According to the findings of the sensory analysis, the addition of oregano to the bread improved its acceptability among customers. The overall acceptability score varied from 7.95 to 8.38 in comparison to the control. At a 2% level, the bread with oregano added was more popular than the control. Additionally, the flavor of milk and its product was enhanced by oregano. Yoghurt had a better flavor, aroma, and color when the density of oregano was increased compared to control yogurt, which had no oregano at all (**Marhamatizadeh et al., 2012**).

After eight weeks of storage, organoleptic overall satisfaction, taste, color, and texture of the fish products at a concentration of 5% ginger were significantly different ($P \leq 0.05$) from those of the untreated control (**Idris et al., 2010**). Black adan instant rice, which had been brewed during the soaking and cooking process and added 3% ginger, had the best flavor and texture (**Saragih et al., 2013**).

It was discovered that supplemented breads had improved baking properties, improved sensory properties in terms of color, texture, mouthfeel, and flavor, a slower staling rate, and a higher antioxidant content when dried and powdered coriander leaf was added to wheat flour. On wheat flour, a powder coriander leaf content of 3.0 to 5.0% (w/w) was found to be the optimal supplementation level that provided the fortified bread with the highest level of acceptability (**Das et al., 2012**).

Health benefits of spices and herbs

Spices

1. Ginger

The rhizome of the plant *Zingiber officinale*, also known as ginger or ginger root, is consumed as a spice, medicine, or delicacy. It gives its genus and family (*Zingiberaceae*) their names. The volatile oils zingerone, shogaols, and gingerols, which make up one to three percent of the weight of fresh ginger, are what give ginger its distinctive aroma and flavor, (**O'Hara et al., 1998**) found that gingerols have analgesic, sedative, antipyretic, and antibacterial properties. A University of Michigan study found that gingerols can inhibit the in vitro growth of ovarian cancer cells (**Rhode et al., 2007**); (**Kim et al., 2008**); (**Choudhury et al., 2010**). Sesquiterpenoids make up the majority of the fragrant essential oil found in ginger, with zingiberene being the most prominent constituent. During this process, gingerols also produce zingerone; This compound has a spicy-sweet aroma and is less strong (**McGee, 2004**).

Nutritional information of Ginger

Parameters	Value
Moisture	80.9 gm
Protein	2.3 gm
Fat	0.9 gm
Minerals	1.2gm
Fibre	2.4 gm
Carbohydrates	12.3gm
Energy	67 kcal
Calcium	20 mg
Phosphorus	60 mg
Iron	3.5 mg
VITAMINS	
Carotene	40 µg
Thiamine	0.06 mg
Riboflavin	0.03 mg
Niacin	0.60 mg
Vitamin C	6 mg
MINERALS & TRACE ELEMENTS	
Magnesium	405 mg
Copper	0.74 mg
Manganese	5.56 mg
Zinc	1.93 mg
Chromium	0.057 mg

Source: C. Gopalan, B. V. Rama Sastri & S. C. Balasubramanian, Indian Council of Medical Research Hyderabad – 500 007, India

Scientif officinale Name	Major Compounds	Microorganisms /Model	Medical importance
<i>Zingiber officinale</i>	Gingerol, Shogoal, Methyl-isogingerol (Banerjee et al., 2011).	E. coli, Salmonella_spp, Staphylococci, Streptococci (Banerjee et al., 2011).	Anti-emetic, to stimulate appetite and improve digestion, analgesic, antipyretic, expectorant, in treatment of migraines and headaches, piles, cholera, colicky pain. (Aggarwal and Kunnumakkara, 2009).

2. Turmeric

Chan et al. say that, Turmeric is a perennial herbaceous rhizomatous plant in the ginger family *Zingiberaceae*. It is native to the tropical Indian Subcontinent and thrives in temperatures between 20 and 30 degrees Celsius (68 and 86 degrees Fahrenheit) and a significant amount of annual rainfall (Revathy and Elumalai, 2016). The active ingredient in turmeric is curcumin, which has a distinct earthy, slightly bitter, slightly hot pepper flavor and a mustardy aroma. The majority of turmeric is produced in India and Pakistan, where it has regional names that are based on the language and country of origin. The name appears to come from the Latin phrase terra merita (merited earth) or turmeryte (**Tahira et al., 2010**). The genus *Curcuma* gets its name from the Arabic names for saffron and turmeric. The most important chemical components of turmeric are a group of compounds called curcuminoids, which include demethoxycurcumin, bisdemethoxycurcumin, and curcumin (diferuloylmethane). Turmerone, atlantone, and zingiberene are significant volatile oils in addition (**Nagpal and Sood, 2013**). Some of the main components are sugars, proteins, and resins. Turmeric, high antioxidant-rich fruits are most abundant immune-boosting foods, plant and spices to boost immunity, people can add these items as a therapeutic diet in daily diet (**Tewari et al., 2020**).

Nutritional information of Turmeric

Parameters	Value
Moisture	13.1gm
Protein	6.3 gm
Fat	5.1 gm
Minerals	3.5 gm
Fibre	2.6 gm

Carbohydrates	69.4 gm
Energy	349 kcal
Calcium	150 mg
Phosphorus	282 mg
Iron	67.80 mg
VITAMINS	
Carotene	30 µg
Thiamine	0.03 mg
Folic Acid (Free)	10 µg
Folic Acid (Total)	18 µg
Niacin	2.30 mg
MINERALS & TRACE ELEMENTS	
Magnesium	278 mg
Copper	0.39 mg
Manganese	8.38 mg
Zinc	2.72 mg
Chromium	0.069 mg
Phosphorus	97 mg

Source: C. Gopalan, B. V. Rama Sastri & S.C. Balasubramanian, Indian Council of Medical Research Hyderabad – 500 007, India.

Scientific Name	Major compounds	Microorganisms / Model	Medical importance
<i>Curcuma longa</i>	Curcumin (Bhavsar and Damani, 2014; Radwan et al., 2014).	S. Typhi, Ls. monocytogenes Clostridium spp. St. aureus, E. coli, B. cereus, B. subtilis, C. albicans, Y. enterocolitica, P. notatum, <i>S. cerevisiae</i> (Bhavsar and Damani, 2014; Radwan et al., 2014).	A variety of clinical conditions, including diabetes, arthritis, and Alzheimer’s disease (Bhavsar and Damani, 2014). In one example of this kind of fundamental research, mice with pancreatitis suffered less severe lung damage when treated with turmeric (Radwan et al., 2014). Myeloma cancer cells were killed by hybrid molecules made from turmeric and the nausea medication thalidomide (Liu et al., 2013). The compounds in turmeric have antibacterial and antifungal properties; Curcumin, however, is not one of them (Ragasa et al., 2005). Turmeric is the most essential pharma-therapeutic food (Tewari et al., 2021).

3. Garlic

One species of the onion genus *Allium* is *Allium sativum*, or garlic. The onion, shallot, leek, chive (**Block, 2010**). Garlic, which is native to central Asia (**Ensminger, 1994**) and has been used by humans for over 7,000 years, is a common seasoning in Asia, Africa, and Europe as well as a staple in the Mediterranean. Both as a food and as a plant for healing, garlic has a long history. Garlic’s therapeutic effects, application methods, and preparation methods vary greatly. It is necessary to provide an explanation of some of the substance characteristics of garlic in order to be able to determine which method of preparation is best suited for which application. The secondary plant constituent’s cysteine sulphoxides are present in the garlic bulb.

Nutritional information of Garlic

Parameters	Value
Moisture	62 gm
Protein	6.3 gm
Fat	0.1 gm

Minerals	1 gm
Fibre	0.8 gm
Carbohydrates	29.8 gm
Energy	145 Kcal
Calcium	30 mg
Phosphorus	310 mg
Iron	1.20 mg
VITAMINS	
Thiamine	0.06 mg
Riboflavin	0.23 mg
Niacin	0.40 mg
Vitamin C	13 mg
MINERALS & TRACE ELEMENTS	
Magnesium	71 mg
Copper	0.63 mg
Manganese	0.86 mg
Zinc	1.93 mg
Chromium	0.02 mg

Source: C. Gopalan, B. V. Rama Sastri & S. C. Balasubramanian, Indian Council of Medical Research, Hyderabad – 500 007, India

4. Cardamom

The “Queen of Spices” is the name given to cardamom. It is one of the world’s most expensive and exotic spices. It is a perennial tropical herb that is a member of the ginger family (*Zingiberaceae*) and can reach heights of 6 to 10 feet from its thick rootstalk. In the South Indian evergreen forests of the Western Ghats, it is indigenously grown. In the Eastern Himalayas, it is a perennial herb that grows under mixed forest trees. It was used in Ayurvedic preparations in India as early as the sixth century BC (**James, 1988**).

Nutritional information of cardamom

Parameters	Value
Moisture	20 gm
Protein	10.20 gm
Fat	2.20 gm
Minerals	5.40 gm
Fibre	20.10 gm
Carbohydrates	42.10 gm
Energy	229 K cal
Calcium	130 mg
Phosphorus	160 mg
Iron	4.60 mg
VITAMINS	
Thiamine	0.22 mg
Riboflavin	0.17 mg
Niacin	0.80 mg
Choline	1550 mg
MINERALS & TRACE ELEMENTS	
Magnesium	173 mg
Copper	0.47 mg
Manganese	8.92mg
Zinc	2.81 mg
Chromium	0.031 mg

Source: C. Gopalan, B. V. Rama Sastri & S. C. Balasubramanian Book – Nutritive Value Of Indian Foods, Indian Council of Medical Research, Hyderabad – 500 007, India

5. Black pepper

The Malabar pepper, also known as the black pepper, is widely grown in India’s Malabar Coast and other tropical regions (**Joshi and Joshi, 2007; Sen, 2004**).

Peppercorns, whether ground, dried, or cooked, have been used for flavor and traditional medicine since antiquity. One of the most widely used spices in cuisine all over the world is black pepper, which is the spice that is traded most frequently worldwide. The chemical compound piperine, which is different from capsaicin, which is found in chili peppers, is what

gives it its spiciness. It is used as a seasoning all over the Western world, is frequently served with salt, and can be found in shakers or mills on dining tables.

Nutritional information of Black pepper

Parameters	Value
Moisture	18.2 gm
Protein	11.5 gm
Fat	6.8 gm
Minerals	4.4 gm
Fibre	14.9 gm
Carbohydrates	49.2 gm
Energy	304 kcal
Calcium	460 mg
Phosphorus	198 mg
Iron	12.4 mg
VITAMIN	
Carotene	1080 µg
Thiamine	0.09 mg
Riboflavin	0.14
Niacin	1.4
Vitamin C	----
MINERALS & TRACE ELEMENTS	
Magnesium	171
Copper	1.42
Manganese	4.14
Zinc	1.31
Chromium	0.074

Source: C. Gopalan, B.V. Rama Sastri & S. C. Balasubramanian, Indian Council of Medical Research, Hyderabad – 500 007, India.

Conclusion

It is possible to draw the conclusion that Indian spices are the subject of numerous international research studies. Spices not only give food flavor and flavor, but they also help keep people healthy and safe from a variety of diseases. Bioavailability can be increased by many herbal compounds. The combination of spices in food not only ensures the food’s effect on the body but also makes it interesting. As a result, efforts have been made to gather information on the bioenhancer properties of Indian spices. In the context of the COVID-19 pandemic that is currently sweeping the globe, traditional Ayurvedic treatments typically have the advantage of having fewer side effects and being more cost-effective than modern pharmaceuticals. These systems may also be looked at as COVID 19 treatment or prevention alternatives to modern medicine. This review provides scientific evidence to support the use of Indian spices to improve the effectiveness of other medications, alleviate various health issues, and prevent future ones. Because it is necessary not only to consume the nutrients, but also for them to reach their intended location. We are aware that when nutrients are properly absorbed, our immune system is strengthened.

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