

CULINARY SPICES AND HERBS IN INDIAN CUISINE

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The word “herb” refers to a wide range of plants, including herbaceous perennials, annuals, vines, trees, and shrubs, valued for flavor, fragrance, medicine or dye. In culinary terms, “herb” traditionally refers to aromatic leafy parts of a plant; “spice” to pungent non-leafy parts, such as bark, fruit, seed, rhizome, root and flowers.

Indian cuisine is as old as its civilization, dating back ~4000 years, and as diverse as its population. It is characterized by an abundant use of spices and herbs; a penchant for spicy “curries”, eaten with rice or wheat bread (often accompanied by pulses, yogurt, vegetables, coconut, aromatic marinades, pickles or chutneys); and the widespread practice of vegetarianism typical of certain religious groups. In addition, Indian cuisine is well-known for its remarkable regional diversity (See discussion below).

Listed below are the commonly used spices & herbs used in Indian cuisine:

ASAFETIDA, *Ferula assa-foetida* (Apiaceae), a perennial, Zone 7-9 (Bengali hing); native to India & Middle East; cultivated in Kashmir, Eastern Iran to Western Afghanistan. Useful part: Oleo-resin from thick fleshy taproot (lump or powdered form). Sulfurous smell when raw, converts to aroma of sautéed garlic/onion when heated in oil. Culinary use: Flavor to curries, lentils, vegetarian dishes, pickles, and chutneys. Followers of Jainism avoid eating root vegetables & use asafetida in lieu of garlic/onion.

BLACK PEPPER, *Piper nigrum*, (Piperaceae) is a tropical, dioecious, woody-stemmed vine, Zone 9-11 (Hindi kali mirch); called “King of Spices”; native to S. & E. India. Useful part: Berries (¼”); black peppercorns from dried unripe berries (used whole or in ground form). Volatile oils: piperidine alkaloids. Culinary use: Ingredient in garam masala and curry powder; flavor and pungency to most savory dishes, meat, fish, vegetables, marinades, chutneys, and pickles.

CARDAMOM, *Elettaria cardamomum* (Zingiberaceae), a large rhizomatous perennial, Zone 8-10 (Hindi elaichi); “Queen of Spices”; Native to SW India; cultivated in India, Sri Lanka, and Guatemala. Useful part: Pods & seeds (dried whole & ground). Essential oil: cineol, limonene. Pods are harvested by hand (2nd most expensive spice). Culinary use: Important ingredient in garam masala; flavor to curries, Mughlai dishes (N. India), pulses, rice dishes, pickles, desserts, and tea (chai).

CHILI PEPPER, *Capsicum annuum* (Solanaceae) is grown as an annual, hardy in Zone 8-11 (Hindi mirch); native to S. America; introduced to India by the Portuguese (1510AD); cultivated world-wide, mainly in Mexico, India, Pakistan and China. Useful part: Fruit. Capsaicin, the source of pungency (“heat”) is concentrated in the membranes attached to the seeds. “Heat” is measured in Scoville Heat Units. Culinary use: Ingredient in curry powder; flavor/pungency to curries, vegetables, meat, fish, snacks, pickles and chutneys.

CINNAMON, *Cinnamomum zeylanicum* (Lauraceae) is a subcanopy small tropical evergreen tree, Zone 9b-11 (Hindi dalchini). Origin: SW India, Sri Lanka. Useful part: Dried inner bark; strips rolled into “quills” or sticks, or in powdered form.

Culinary use: Ingredient in garam masala; used in curries, rice dishes (e.g., pilau, Biryani, Parsee fried rice), desserts, coffee, and tea (chai).

CLOVE, *Eugenia caryophyllata*, synonym: *Syzygium aromaticum* (Myrtaceae), a small tropical evergreen tree (Hindi laung); native to the Moluccas (Spice Islands); cultivated in Africa, India and Sri Lanka. Useful part: Fragrant, unopened flower buds, sundried (whole or ground). Volatile oil: eugenol. Culinary use: Ingredient in garam-masala; flavor to curries, meat and rice dishes, and tea (chai).

CORIANDER, *Coriandrum sativum* (Apiaceae) is an annual (Hindi dhania); native to S. Europe, N. Africa to SW Asia; cultivated in Russia, India, S. America and N. Africa. Useful part: Dried seed (coriander), technically a fruit (whole/ground form); pinnate to 3-pinnate leaves (cilantro), used fresh. Culinary use: Ingredient in curry powder & garam masala; flavor to curries, meat, fish, vegetables, salads, pickles, chutneys, as garnish.

CUMIN, *Cuminum cyminum* (Apiaceae) is an annual only 6" high (Hindi, jeera); native to the Mediterranean (N. Africa & SW Asia); Cultivated in India, Turkey, N. Africa, & China. Useful part: Seed (6-sided aromatic seed with parallel sides, 5mm long). Culinary use: Ingredient in curry powder, garam masala and 5-spice mix (Bengali). Flavor in curries, vegetables, fish, meat, lentils, rice, snacks, pickles.

CURRY LEAF, INDIAN, *Bergera koenigii* (Rutaceae) is a tropical shrub/small tree, hardy to Zone 9 (Hindi kurry-patha); native to India, Myanmar, Indochina to S. China. Useful part: Pinnate leaves with curry-like aroma, used fresh. Culinary use: Flavor in S. Indian curries, lentils, vegetables, fish, meat, snacks, pickles, chutneys, and raita. Note: *Bergera koenigii* does not have FDA GRAS status; in addition, the seeds of the black berries are considered poisonous (Tucker-DeBaggio).

FENUGREEK, *Trigonella foenum-graecum* (Fabaceae) is an annual (Hindi methi); native to S. Europe and Asia. India is the largest producer; widely naturalized. Useful part: Quadrangular, yellow/pale brown seed, from ripe bean-like curved pod. Culinary use: Ingredient in curry powder and 5-spice blend. Flavor to S. and E. Indian curries, fish, lentils, meats, vegetables, bread, chutneys and pickles.

GARLIC, *Allium sativum* (Liliaceae) is a bulbous perennial, Zone 4-9 (Hindi lahsun). Native to India and Central Asia; Cultivated widely. Does not produce fertile seeds and is grown as an annual from its cloves. Useful part: Bulb, 4-20 bulblets (cloves). Pungent aroma is caused by cellular disruption due to S-containing "allicin". Culinary use: In almost all Indian foods, except desserts.

GINGER, *Zingiber officinale* (Zingiberaceae) is a rhizomatous deciduous perennial, Zone 9-11 (Hindi adarak); Native to tropical India & Indonesia; exported from India & Jamaica. Useful part: Thick branching rhizome (used fresh whole or dried powdered form). Volatile oils: gingerols, shogaols. Culinary use: In curries, vegetables, meat, fish, marinades, chutneys, pickles, and tea (chai).

MINTS, *Mentha spicata*, *Mentha x piperita*, (Lamiaceae) are herbaceous perennials, Zone 5-10 (Hindi pudina); native to the Mediterranean; cultivated world-wide. Most mints are sterile. Propagate by division. Useful part: Aromatic leaves. Culinary use: Flavor in salads, vegetables, raita, chutney, iced drinks, tea, & as garnish,

MUSTARD SEED, *Brassica juncea* (Brassicaceae), also called brown or Indian mustard, is a cool season annual (Hindi rai); Native to South and Eastern Asia and the Middle East. Useful part: Dark brown seed (1-3mm), in whole or ground form.

Culinary use: Ingredient in curry powder and 5-spice mix; adds flavor and pungent “heat” to S. and E. Indian (Bengali) curries, meats, lentils, fish, pickles, and rice.

NUTMEG, *Myristica fragrans* (Myristicaceae) is a large tropical evergreen tree (Hindi jaiphal); Cultivated in the Moluccas, Asia, Sri Lanka, and Grenada.

Useful part: Seed, covered by hard brown shell, in turn covered by a red aril (mace).

Culinary use: Ingredient in garam masala; flavor to desserts, curries, lamb, vegetables, and rice (pilau and biryani).

ONION, *Allium cepa* (Liliaceae), a bulbous biennial, Zone 4-9 (Hindi, pyaz), grown as an annual from “sets”; native to Asia; cultivated widely. Useful part: Bulb. Less piquant than garlic; has a tear-evoking property (thiopropenal). Culinary use: Fundamental to Indian cuisine for flavor to almost all foods, except desserts; used fresh as a base to add spices in curries, vegetables, meat, fish, and rice.

POPPY SEED, WHITE, *Papaver somniferum* (Papaveraceae), annual (Hindi khus khus); Native to S. Asia; seeds from India & Mid East are called Asian white poppy seed. Useful part: Tiny hard ripe seeds from dried fruit (capsule); seeds lack measurable amounts of alkaloids (opium). Culinary use: Mild, sweet nutty flavor when roasted used in pastries, bread, meats; thickens and adds texture to curries, such as korma and fish.

SAFFRON, *Crocus sativus* (Iridaceae), fall-blooming, cormous perennial, Zone 6-8 (Hindi kesar); Origin: the Mediterranean; cultivated in Kashmir & Spain (grows most of world’s saffron). Useful part: Three part stigma (dried). Harvested by hand, the most expensive spice (75,000 flowers or 225, 000 stigmas=1 lb saffron). Culinary use: Orange-red color/flavor to Mughlai dishes, rice (pilau, biryani), stews, meat, fish, and desserts.

TAMARIND, *Tamarindus indica* (Fabaceae) a large tropical evergreen tree, Zone 9 (Hindiimli); Native to Africa; Cultivated in India for centuries; now grown widely all over tropics. Useful part: Fruit (ripe pods with sticky brown acidulous pulp); sold compressed in lump or block form. Culinary use: Sweet-sour agent in South Indian curries (sāmbhar, rasam, vindaloo), pulses, meat, fish, marinades, chutney, and sauces.

TURMERIC, *Curcuma longa* (Zingiberaceae) is a rhizomatous perennial, Zone 11 & warmer (Hindi haldi). Native to S. Asia (probably W. India); cultivated in India.

Useful part: Rhizomes, always used in dried powdered form.

Culinary use: Flavor and orange-yellow food color, essential in curry powder, used in meat, vegetable and lentil dishes; substitute for saffron in rice, curries and desserts.

SPICE BLENDS: CURRY POWDER: A south Indian masala (spice blend) of varying composition, developed during British rule to approximate the taste of Indian cooking. Ingredients: Turmeric (for color), coriander, cumin, fenugreek, mustard seed, chili powder, and black pepper.

[NOTE: “Curry” is a generic term for a spicy “gravy” or “sauce”, eaten with rice or bread].

GARAM MASALA: “Garam” = “hot” for spice intensity; “masala” = spice blend. A northern Indian masala that is pungent, not fiery-hot. Ingredients: Coriander, cumin, cardamom, cinnamon, clove, nutmeg, bay leaf, and peppercorns.

5-SPICE MASALA (Panch Phoran): A spice blend from east India (Bengal, Bihar, Orissa). Ingredients: Whole seeds of cumin, fenugreek, *Nigella sativa*, mustard and fennel. Culinary use: with vegetables, lentils and fish. Frying the mix in oil causes it to start popping (“tempering”). At this point, other ingredients are added to coat with the spices.

REGIONAL DIVERSITY: The diversity of Indian cuisine is the result of the diversity of its population, topography, and historical influence. India extends from the Himalayas to the Indian Ocean (latitude 37⁰N to 8⁰N); in between is the Great Thar Desert (NW India); Gangetic Plain (North to E. India); rainforest of the SW Ghats; Peninsular Deccan plateau (Central & S. India), and the Coastal Plains. The Himalayan Valley (Jammu & Kashmir) has a Hindu and Muslim cuisine rich in nuts, fruits, vegetables and meat. The Desert region is typical for dry, grain-based food and use of chickpea/millet flours. The Gangetic Plain is rich in rice, dairy, fish, coconut, spiced with mustard seed in the east; Punjab (65% Sikhs) cuisine is noted for dairy, grain, pulses, tandoori-style, and naan; the Coastal Plains are rich in rice, fish, seafood, coconut; hot-spicy vegetarian and non-vegetarian curries are typical of the south.

All major religions are represented in India; the population is 80.5% Hindu, 13.4% Muslim, 2.3% Christian, 1.9% Sikh, 0.8% Buddhist, 0.4% Jain, & 0.7% miscellaneous, including Zoroastrians and Jews. Hindus, Buddhists & Jains tend to be vegetarian; the others non-vegetarian. Hence, Indian cuisine includes a variety of vegetarian and non-vegetarian foods; Muslims do not eat pork; Hindus & Sikhs do not eat beef (as they revere the cow).

Historical influence: Around 850 AD, Zoroastrians escaped from Persia to Gujarat and Bombay; their cuisine is a mixture of Gujarati and Persian-styles, typified by “Dhansak” (“Parsee” lentil curry). The Portuguese colonized Goa and converted it into a Christian colony (1510-1961); they introduced chili pepper & vinegar, typical of spicy-hot curries such as “pork vindaloo”. N. India was ruled by Mughal emperors (1526-1857AD); the vegetarian and Mughlai dishes are noted for tandoori-style and use of fruit, grains, dairy and nuts, as in kormas, naan, and biryanis (rice and meat flavored with saffron). Lastly, British colonial rule in India (1858-1947) gave rise to an Anglo-Indian cuisine, classic for Mulligatawny soup and sweet mango chutney.

References:

1. Brickell C and Cathey HM. The American Horticultural Society A-Z Encyclopedia of garden plants. Dorling Kindersley Publishing, Inc. New York, NY, 2004.
2. Bown D. The Herb Society of America New Encyclopedia of Herbs and Their Uses. New York, Dorling Kindersley Publishing, Inc. 2001.
3. Schlosser KK (editor). The Herb Society of America’s Essential Guide to Growing and Cooking with Herbs. Louisiana State University Press, 2009.
4. Tucker AO, DeBaggio T. The Encyclopedia of Herbs: A Comprehensive Reference to Herbs of Flavor and Fragrance. Portland, OR, Timber Press Inc. 2009.
5. McVicar J. The Complete Herb Book. Firefly Books (US), Inc., Buffalo, NY, 2007.