

A top-down view of several small white ceramic bowls filled with various herbs and spices, arranged on a rustic wooden surface. The bowls contain: a reddish-brown powder, white peppercorns, red peppercorns, dried green herbs, a mix of colorful peppercorns, a yellow powder, bay leaves, brown peppercorns, a dark green herb, and a yellow powder. The text is overlaid on a white rectangular background in the center.

Adding Health Benefits and Flavor to Your Food With Herbs and Spices

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“Wars were fought over them, kingdoms were lost because of them, and new lands were discovered in search of them. In ancient times and for centuries to follow, (herbs &) spices were often more precious than gold. But before they were money, spices were medicine.”

- Bharat Aggarwal, PhD

Herbs, Spices, & Alliums



Herb: come from the leafy green part of the plant

Spice: come from a part other than the leaf- seed, root, bark

Allium: garlic, chive, onion, leek

Benefits of Herbs & Spices

- Adds flavor and has the ability to increase enjoyment of food
- Imparts characteristic flavor (sour, sweet, salty, tangy)
- Some are natural tenderizers for meats
- Many offer health benefits through abundant phytonutrients and other physiologic effects such as acting on the digestive system (carminative)

A Note About Phytonutrients



- Phytonutrients are protective compounds found in **plants** (herbs, spices, alliums, fruit, vegetables)
- Have **health promoting** properties (**antioxidant** and **anti-inflammatory**)
- **Better in food/plants-** studies in whole food and plant form (herb/spice) show benefit
- **Give plants their color**, also present in white foods (garlic, onions, leeks)
- Cannot get solely from fruits & vegetables

Herb/Spice Specific Phytonutrients

- Anthocyanins
- Flavanols
- Flavones
- Isoflavones
- **Rosemarinic acid**
- Kaempferol
- Resveratrol
- Apeginin
- **Carbazole alkaloid**
- Zeaxanthin
- Capsaicin
- **Curcumin**
- **Gingerol**
- Daidzen
- Genistein
- Lycopene
- Cinnamic acid
- **Piperine**
- Cathechins
- Ellagic acid
- Sulforafane
- **Thymoquinone**
- Carotenoids
- **Anethole**
- Myricetin
- **Diosgenin**
- Silybin
- Lignans
- **Eugenol**
- Coumarin

...and THOUSANDS more!

Fresh Vs. Dried?

ORAC Values For 10 of the Most Popular Spices

	Spice	Fresh Version	Dried Version
1.	Basil	4,805	61,063
2.	Oregano	13,970	175,295
3.	Parsley	1,301	73,670
4.	Garlic	5,708	6,665
5.	Thyme	27,426	157,380
6.	Ginger	14,840	39,041
7.	Sage	32,004	119,929
8.	Marjoram	27,297	92,310
9.	Rosemary	11,070	165,280
10.	Peppermint	13,978	160,820

ORAC stands for Oxygen Radical Absorbance Capacity. When it comes to measuring the antioxidant activity in food, it is the most elaborate method and considered to be the gold standard.

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Fresh Vs. Dried?

1. Post-harvesting treatments

Was the produce irradiated (common in non-organic), UV treated, or coated with chemical preservatives? These will affect antioxidant

2. Temperature, light, and oxygen

The less exposure for each of these, the better and more nutritious plant-based foods will be for you

3. Type of plant

How fast do freshly picked vegetables and herbs lose their nutrients? The answer varies based on species. For example, green peas stored in a refrigerator (39° F) for 7 days will retain 85% of their vitamin C content. For green beans, only 23% will be remaining ([4](#)).

Top 6 Culinary/Medicinal Herbs & Spices For Your Kitchen



1. Basil
2. Cinnamon
3. Garlic
4. Ginger
5. Rosemary
6. Turmeric

Basil

Types:

1. Sweet Basil (US & Europe)

Full flavor and sweet

2. Thai Basil

Often used in gourmet cooking. Spicier

3. East Indian Basil

Clove like fragrance

4. Holy Basil (Tulsi)

More eugenol than other basil, very clove like. Used in teas



Basil

Part Used In The Kitchen:

Leaf

Native To:

India, Southeast Asia, North Africa, Can also be easily cultivated

Culinary History

- Italy's Liguria region (Genoa) where pesto invented
- Provence region France a similar basil sauce called *pistou*
- Holy basil and Thai basil have been used in southeast asian cooking, particularly Vietnam
- Revered in India, Tulsi tea



Basil Continued

Traditional Uses & Potential Health Benefits:

- Holy Basil studied for normalizing cortisol levels and “anti-stress effects”
- Contains flavenoids *orientin*, *vicenin* have been shown to protect chromosomes from free radicals, and volatile oils *eugenol*, *linalool* and *cineole* have anti-bacterial properties
- Eugenol blocks cyclooxygenase (COX) giving it analgesic properties



Basil: Selection & Storage

- Choose fresh over dried when possible
- Look for vibrant green leaves
- Fresh basil should be stored in refrigerator wrapped in slightly damp paper towel
- Can freeze fresh basil in water or stock in ice cube trays to use in cooking soups



Basil Recipes

Fresh

- Chop and add to fresh salads
- Add into cold pasta dish and dress with extra virgin olive oil
- Put whole leaves on slices of tomato with mozerella
- Pesto or Pistou



Dried

- Add at the very end of cooking to impart flavor (stir fries, pasta sauces)
- As rub for fish, poultry, & meat
- To help taste fresh mix $\frac{1}{2}$ tsp dried basil with $\frac{1}{2}$ tsp lemon juice, $\frac{1}{2}$ tsp water, $\frac{1}{2}$ tsp oil- let stand for a few minutes

Cinnamon

Types

1. True Cinnamon or Ceylon (*Cinnamomum verum*)

Used in Mexico, Latin America, India, and South Asia

2. Cassia Cinnamon (*Cinnamomum cassia*)

Sweeter and stronger. Most commonly used in United States and Europe – more readily available and cheaper



Cinnamon

Part Used In The Kitchen:

Bark

Native To:

Southern China, Southeast Asia, Sri Lanka

Culinary History

- Was so highly regarded considered more precious than gold
- Used in India and China in cuisine and as medicine
- Used to prevent meat spoilage (due to phenols which inhibit bacteria)
- Used in United States and Europe in sweet dishes and mulling cider and wine



Cinnamon

Traditional Uses & Potential Health Benefits:

- Has been found to slow gastric emptying reducing rise in post-prandial blood glucose
- Recent research showed .83% decrease in A1C in Type 2 DM patients
- Has been studied in and found benefit in small trials in Poly Cystic Ovarian Syndrome and boosting cognitive functioning
- The volatile oils in cinnamon show antifungal and antibacterial effects
- Used as a “warming” spice with ginger at the first sign of a respiratory infection



Cinnamon: Note on Safety

Cassia Cinnamon (*Cinnamomum cassia*)

- Contains coumarins found in varying amounts in different brands (coumarin can cause liver damage in susceptible individuals)
- European Food Safety Authority found tolerable daily intake of coumarin to be 0.1 mg per kg (roughly 7mg for a 70kg or 154lb person)
- Coumarin content ranged from 0.1mg-6.8 mg/ gram in common brands (would be at max with $\frac{1}{4}$ tsp in some brands)



Cinnamon: Selection and Storage

- Ground cinnamon stays fresh for approximately 6 months, sticks up to 1 year
- Choose Ceylon when using large amounts frequently (*Cinnamomum verum*)



Cinnamon: Recipes

- Roast root vegetables with cinnamon
- Add to warm or cold breakfast cereal
- Add cinnamon quill to beef or vegetable stews (or lentil soup)
- Sprinkle cinnamon on fruit
- Mix cinnamon with mint and parsley and add in burgers or meatloaf
- Make a rub for meat with equal parts cinnamon, cardamom, and black pepper
- Mix into grains (rice, quinoa)
- Add to warm drinks (tea, cocoa)



Garlic (*Allium sativum*)

Part Used In The Kitchen:

Clove

Native To: Central Asia

Top producers include China, South Korea, India, Spain & US

Culinary History & Today

- It was fed to Egyptian slaves building the pyramids and Olympic Athletes in ancient Greece to increase endurance and strength
- Garlic has made its way into almost every cuisine in the world (Mexico, India, Asia, Greece, Italy, France)



Garlic

Traditional Uses & Potential Health Benefits:

- Cardiovascular benefits (lowers triglycerides and total cholesterol, lower blood pressure, decreases atherosclerosis)
- Meta-analysis showed those with highest consumption of garlic had 41% lower risk colon cancer compared to those with lowest intake
- Anti-bacterial and anti-viral effects



Garlic

Selection & Storage:

- Buy fresh bulbs by looking for bulbs that are plum, dry, without broken skin
- Buying bulbs with large cloves makes it easier to work in kitchen
- Store fresh uncovered in cool place away from heat and sunlight
- Fresh keeps for 2-3 weeks
- Dried garlic keeps for 1 year



Garlic

Tips for In The Kitchen:

- Peel garlic (place on cutting board and tap with flat side of knife)
- Remove green parts
- Chopping/crushing stimulates enzymatic conversion of phytonutrient alliin to allicin (health benefits)
- Wait 5 minutes before adding acidic ingredients to crushed garlic and 10 minutes before cooking
- When cooking expose to as little heat as possible (5-15 minutes) using lower temperatures (<250* F)



Garlic

Tips To Help With Odor:

- Drink red wine with meal
- Add parsley to meal or chew on fresh sprigs following meal
- Chew roasted fennel or cardamom seeds



Odor off Hands:

- Wash hands with water and lemon juice
- Rub hands with stainless steel spoon then wash
- Moisten hands and rub baking soda between palms

Garlic

Recipes:

- Stuff cloves into roasts and other meat dishes
- Slice or press fresh garlic into extra virgin olive oil to use in marinade, dipping sauce, salad dressing
- Add to soups and stews
- Puree roasted garlic, cooked potatoes and olive oil for garlic mashed potatoes
- Stud garlic cloves in thick eggplant slices and sprinkle with coriander, ground ginger, and grill until tender



Ginger (*Zingiber officinale*)

Part Used In The Kitchen:

Rhizome/ root

Native To: India, Nigeria, Siera Leone, Hawaii

Culinary History & Today

- Was a popular spice in ancient China & Rome
- Was so popular in Europe it was used on table (like salt & pepper) & sprinkled in beer
- Elizabeth I said to present guests at state dinners with a Gingerbread man shaped in his/her image



Ginger

Traditional Uses & Potential Health Benefits:

- Studied extensively for GI complaints (motion sickness, nausea & vomiting from multiple causes)
- Has been found beneficial in small trials for osteoarthritis and migraine
- Warming and used in respiratory infections



Ginger

Selection & Storage:

- Look for a rhizome (hand) that are firm and swollen, with smooth skin (wrinkled is old)
- Fresh skin is light brown with slight pink tinge and knobs are yellowish green
- Fresh ginger contains more gingerol which gives it a stronger flavor
- Store as you would onions in cool dark place



Ginger

Tips For In The Kitchen:

- Peel fresh ginger with paring knife and slice (ideal is quarter sized)
- Indian cuisine tends to grind with mortal and pestle
- If added at beginning of cooking the flavor will be more subtle
- Add near the end for a more pungent taste



Ginger

Recipes:

- Add grated ginger to vegetable stirfry
- Rub into meat for flavor and to tenderize
- Grate over tofu or noodles
- Grate into melted butter and serve as a sauce with shellfish
- Add ginger and orange juice to pureed sweet potatoes
- Add to rice dishes with sesame seeds and seaweed flakes
- Add to lemonade or hot cider



Rosemary (*Rosemarinus officinalis*)

Part Used In The Kitchen:

leaves

Native To: Mediterranean

Now grows in temperate regions of Europe and America

Culinary History & Today

- Was a popular spice and medicine in ancient Greece
- Today particularly popular in Mediterranean cuisine and in Italy and the Provence region of France where it is used in sweet and savory meals



Rosemary

Traditional Uses & Potential Health Benefits:

- Contains *rosmarinic acid*, *carsonic acid*, and *carnosol* a special blend of antioxidants making rosemary a more potent antioxidant than BHA/BHT (man made antioxidants)
- When used as marinade or added to meats when grilling up to a 61% decrease in heterocyclic amines (HCA)
- Has been shown to lower cortisol levels when inhaled and has been shown to improve memory.



Rosemary

Selection & Storage:

- Fresh rosemary should have vibrant green leaves free from spots or yellowing
- Fresh should be stored in the refrigerator in original packaging or wrapped in slightly damp paper towel
- Can also place recently snipped sprigs in glass of fresh water (1 week)
- Dried it can be kept for up to six months



Rosemary

Recipes:

- Add to egg scrambles, omelets, and frittatas
- Season chicken, lamb, and fish by placing a sprig under the meat
- Add to tomato soups and sauces
- Add to scones, biscuits, and breads
- Puree fresh leaves with olive oil and use as a dipping sauce
- Infuse a rosemary stalk in vinegar
- Use to flavor roasted vegetables
- Use to flavor roasted nuts



Turmeric (*Curcuma longa*)

Part Used In The Kitchen:

Rhizome

Native To: Indonesia and Southern India

Culinary History & Today

- Was a popular spice and medicine many Eastern cultures
- Today it is used as a flavoring agent in cuisines across the world
 - Americans- gives yellow color to american cheese, mustard, broths, butter, yellow cake
 - India: key ingredient in curry and masalas
 - Moroccans combine with saffron to make a traditional soup
 - Japanese use it in tea, vinegars and noodles



Turmeric

Traditional Uses & Potential Health Benefits:

- Compound curcumin gives turmeric much of its medicinal effects- potent antioxidant and anti-inflammatory
- 1,000 studies support turmeric as an anti-cancer herb through multiple mechanisms
- Beneficial in osteoarthritis
- Current studies are looking at its use in alzheimers, cardiovascular disease, parkinson's, IBD, and depression



“No herb is under more scientific scrutiny and offer(s) more promise for better health than turmeric”

Bharat Aggarwal, PhD

Turmeric

Selection & Storage:

- Two regions in India produce turmeric (Alleppey and Madras)
- Choose Alleppey when possible as it has been shown to contain nearly 2x amount of curcumin
- There may be variability in color from batch to batch which is normal (not sign of deterioration)
- Fresh rhizome is sometimes found in Asian or Indian markets
- Use within a few months



Turmeric

Tips For The Kitchen:

- The flavor mellows with cooking: heat a little oil and sprinkle with turmeric stirring with wooden spoon
- If wanting to travel outside GI system add pepper and fat for better absorption
- Make sure to gently cook prior to adding to dishes, sauces, or salad dressings

Note About Amount To Use:

- Average person in India uses 1 tsp daily in cooking

(lower incidences of Alzheimers, DM II, and cancer)



Turmeric

Recipes:

- Add to sautéed or roasted vegetables
- Add to rice or pilaf
- Try it with braised greens like kale or cabbage
- Add 1 tsp to meat and vegetable stews (serves 4)
- Add to dishes with cruciferous vegetables and onions
- Add to scrambled eggs and frittatas
- Use in curry
- Add to dips and salad dressings
- Use as flavoring with coconut dishes



Storage of Your “Medicinal” Pantry

- Keep herbs and spices readily available:
- Best stored in airtight tin or glass container (*keep these on hand for when making fresh spice mixes or drying herbs from garden*)
- Store in cool dark place (50-60* F)
- Some experts recommend not keeping longer than 6 months while others say 1 year for ground spices and 2 years for whole spices
- Nose Test- open bottle and if little aroma toss it out. If whole spice rub between fingers- it should release volatile oil that can be felt and smelled

Herb & Spice Equipment

1. Mortar & Pestle:

Use for crushing spices in small amounts- 1 tsp or less. Marble is best

2. Spice Grinder:

Spice grinder or coffee grinder (for spice use only)

3. Small Heavy Skillet:

Use for dry roasting prior to grinding specific whole spices and seeds- cast iron best



Making Your Own Spice Mixes

Benefits of Homemade Spice Mixes:

- Can avoid fillers, flavor enhancers & preservatives (modified food starch, partially hydrogenated oils, MSG, etc)
- Increased freshness and enhanced flavors
- Convenience of not running to store every time need a spice mix



Making Your Own Spice Mixes

Notes on Making Mixes:

- Spice mixes are best used in one month (though some can last 3-6 months)
- ½ the recipe the first time to get an idea of how quickly you'll use
- Have clean airtight containers on hand for storage of mixes



Curry Mix

2 tablespoons whole
cumin seeds, toasted
2 tablespoons whole
cardamom seeds, toasted
2 tablespoons whole
coriander seeds, toasted
1/4 cup ground turmeric
1 tablespoon dry mustard
1 teaspoon cayenne

- Place all ingredients in a container with an airtight lid. Shake to combine. Store in a cool dry place for up to 6 months. When ready to use, grind and add to dishes according to taste.



Chinese Five Spice

3 Star Anise

2 Tb Szechuan
peppercorns (or 1 Tb
ground aniseed and 1 Tb
allspice)

1 Tb Fennel Seeds

1 Tb Whole Cloves

1 Three inch Cinnamon
Stick

- Place all ingredients in spice grinder and process until a fine powder
- Will keep for up to 6 months
- Makes $\frac{1}{4}$ cup



Herbs de Provence

2 tablespoons dried savory
2 tablespoons dried rosemary
2 tablespoons dried thyme
2 tablespoons dried basil
2 tablespoons dried marjoram
2 tablespoons dried lavender
flower

- In a small mixing bowl, combine all the ingredients together. Store in an air-tight container.



Resources

Specialty & Gourmet Spice

Mountain Rose Herbs:
www.mountainroseherbs.com

My Spice Sage:
www.myspicesage.com

Hard to Find:

Ceylon (true) Cinnamon:
www.ceylon-cinnamon.com

Resources Continued

Healing Spices by Bharat Aggarwal, PhD

The Flavor Bible Page & Dormenburg

Rebecca Katz, RD

<http://www.rebeccakatz.com>

Recipes & cookbooks

