

# SPICES AND NUTRITION



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# WHAT ARE SPICES?



- Spices have a sharp taste and odor
- Spices are **more pungent and aromatic** than herbs
  - Spices are distinguished from herbs by use of seeds, roots, bark, berries and flower stigma (saffron for example) compared with leaves of herbs
- Spices improve the color, flavor, taste of food and add variety to meals; they also **mask bad tastes**
  - Prior to refrigeration spices were highly valued for these properties
- Common spices include Allspice, Cinnamon, Cloves, Ginger, Mace, Mustard, Nutmeg and Pepper
- Spices last longer when stored in a cool, dark place



# THE SPICE TRADE

- From ancient times spices came to Europe via Arab traders from India and China
  - The trade was interrupted by wars between Catholic Europe and the Moslem world. Spices became emblems of conspicuous consumption and had a luxury value
- Vasco de Gama in 1498, opened up the trade to Europe
  - He brought pepper and other spices from India back to Europe - 100 lbs pepper purchased in India, brought by ship to Lisbon on an 18 month trip, would finally be sold in Venice for a 96% profit
- Spain introduced ginger to Mexico in 1530 as the first transplanted crop from Asia to the Americas

Source: *A World Tour of Flavor*, Ducros, 2017

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# THE SPICE ISLANDS

- Cloves, nutmeg and mace (the outer shell of nutmeg) grown on a few small volcanic islands called the Banda islands in the Moluccas in Indonesia
- Dutch East India company and later the British brought nutmeg trees to grow in other regions including Papua New Guinea, Sri Lanka and the Caribbean islands like St Vincent and St Lucia



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# SPICES AND HEALTH PROPERTIES

- Many spices have anti-inflammatory properties
  - Cinnamon
  - Ginger
  - Turmeric (curcumin as main active principle)
  - Saffron
- Some spices provide pain relief
  - Capsaicin is active principle in chili peppers, cayenne and other hot peppers
  - Capsaicin inhibits accumulates Substance-P at nerve endings which prevents pain impulses being transmitted to the brain
  - Used topically for pain relief



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# USES OF SPICES

- **Allspice** also called Jamaican pepper has a flavor of combined nutmeg, cloves and cinnamon
  - Marinades, curing and jerking of meats
- **Anise** seeds have a licorice flavor
  - Breads, candies and alcoholic liquor flavoring
  - Ingredient in Indian fish and vegetable curries
  - Complements cinnamon and nutmeg flavors
  - Leaves infused as a antiseptic medicinal tea for oral health and upper respiratory ailments
- **Caraway** seeds have a nutty, peppery flavor
  - Seeds sprinkled on baked goods
  - Flavoring of the liquor aquavit



# MORE SPICES

- **Cardamom** has a warm, sweet flavor and an aroma combining ginger, coriander and nutmeg
  - Popular ingredient in Asian cuisine
  - Scandinavian flavoring for fruit compotes, gingerbread and meatballs
  - Accompaniment for sweet potatoes and squash
- **Cayenne (Crushed Red Pepper)** adds warm flavor and is main ingredient in chili powder
  - Popular in Mexican, Caribbean, Chinese and Indian cuisines
  - Ingredient in most barbecue sauces



# STILL MORE SPICES

- **Celery Seed** have a strong, slightly bitter flavor
  - Enhances flavors of casseroles, fish, poultry and sauces
  - Celery seed goes well with potato dishes
  - Celery salt is often used with lemon zest
- **Chili Powder** is a combination of dried chili peppers and may also contain cumin, garlic, oregano or salt
  - Used to flavor Southwestern cuisine beans and meat
- **Cloves** have a pungent flavor and aroma
  - Added to roast meat
  - Added to baked goods including gingerbread





# SPICES AND ASIAN CUISINES

- **Cumin** is a plant from the parsley family; the seeds have an earthy, nutty flavor used whole and ground
  - Chickpeas, couscous, vegetarian dishes and yogurt
- **Curry** powder is a mixture of spices including coriander, cumin, pepper, chili peppers, ginger, fenugreek, onion, cinnamon, paprika, saffron, cilantro or turmeric depending on the region
  - Staple of Indian and southeast Asian cuisine for meats especially lamb
- **Fenugreek** has a strong, bitter-sweet flavor with a caramel or maple-like aftertaste

Ingredient in Asian dishes and curry



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# SPICES AND LIQUORS AND WINE

- Liquors are grain or sugarcane spirits originally used as medicines
  - Anise liquor popular in the South of France as Pernod
  - Aquavit liquor popular in Scandinavia made from caraway seeds
- Rum is flavored with spices including vanilla, nutmeg, cinnamon and anise
- Hot spiced wine or mulled wine



# SPICED TEAS

- Black tea with spice flavorings
  - Indian Chai – variety of Indian spices
  - Ethiopian spiced tea made from black tea with cinnamon, cardamom, orange and honey
  - Russian spiced tea made from black tea with cloves, cinnamon, pineapple juice, orange juice and sugar
  - Tibetan spiced tea with ginger, orange peel and added salt and yak dairy

Source: [www.thespruce.com](http://www.thespruce.com)



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# STORAGE OF SPICES AND USEFUL TOOLS



- Store in airtight glass jars
- Old Bay spice tins soon to be replaced by plastic <sup>1</sup>
- Most spices are irradiated to prevent mold and effectively eliminate organisms that cause foodborne illness
- A mortar and pestle, a pepper mill with adjustable grind size and a spice grater are useful tools if you don't purchase already powdered spices

*Source: Spice Storage Tips [www.mccormickforchefs.com](http://www.mccormickforchefs.com)*



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# HISTORY OF SPICE TRADING

- Apothecary stores established in Baghdad in 8<sup>th</sup> century selling camphor, cassia, cloves, nutmeg
- Trade in Europe governed by guilds; guild of physicians, apothecaries and spice merchants was formed in Italy
- Guilds separated into apothecary and medicine
- Guild of Pepperers responsible for maintaining standards for the purity of spices and setting for weights and measures was formed in London dates from 1180 (later to become Guild of Grocers)



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# HISTORICAL USES OF SPICES AS REMEDIES

- Ayurveda is an ancient Indian healing system that includes many spices <sup>1</sup>
- Arabic traditional remedies include many spices <sup>2</sup>
- Christian monasteries from 5<sup>th</sup> to the 12<sup>th</sup> century became centers for learning and medicine in Europe <sup>3</sup>
  - Carminative or relieving flatulence (gas)
    - Caraway, cinnamon
  - Digestive or stomachic
    - Caraway, Cinnamon, Mustard, Nutmeg-mace
  - Cathartic or purgative or strong laxative
    - Anise, Licorice, Turmeric (weakly cathartic)



<sup>1</sup> University of Maryland, 2017

<sup>2</sup> Aramcoworld.com, 2017

<sup>3</sup> *The Cambridge World History of Food*, 2000



# MORE SPICES

- **Ginger** root has a slightly sweet, citrus flavor
  - Used in sweet beverages as ginger ale or ginger beer
  - Asian dishes include ginger



- **Licorice Root**

- Licorice has a woody flavor that combines well with anise
- Used in sweets and a flavor for medications

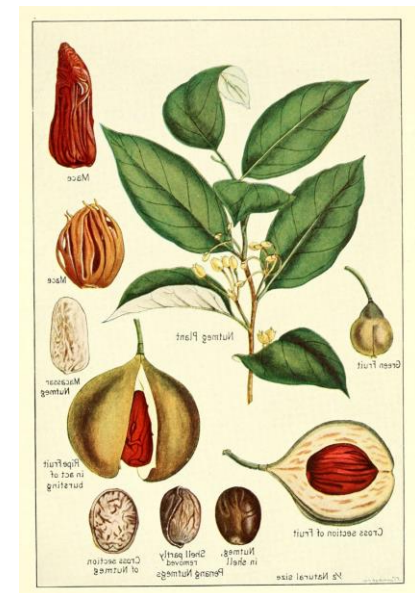
- **Nutmeg**

- Nutmeg is hard seed with a covering called **Mace**
- Key ingredient of eggnog
- Flavor enhancer for meat and poultry or baked vegetables



# PUMPKIN SPICE

- An American spice mix similar to Mixed Spice (of British and Commonwealth origin)
  - Powdered cinnamon, cloves, ginger, nutmeg and allspice
  - Used as a seasoning in pies and other desserts and in beverages





# GINGER AND MEDICINAL PROPERTIES

- Ginger *Zingiber officinalis* is a spice with active constituents 6-gingerol, 8-gingerol and 12-gingerol
- Gingerol upon heating becomes zingerone which is less pungent and has a spicy-sweet aroma
- 6-gingerol is a potent inhibitor of NF-kappaB, a signaling protein and mediates COX-2 expression <sup>1</sup>
- Essential oil of ginger is good for nausea



<sup>1</sup> Park, M et al, *Phytotherapy Research*, 2008

<sup>2</sup> Wallace, JM, *Integr Cancer Ther.* 2002



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# FIRE AND SPICE

- **Mustard** seeds are used in pickling and powdered as a condiment
  - Accompanies meat and fish dishes
  - Ingredient in salad dressings, mayonnaise and sauces
- **Paprika** comes from sweet, red peppers that vary in warmth
  - Ingredient in Hungarian and Spanish dishes
  - Adds flavor and color to soups and casseroles
- **Pepper** is used in every cuisine and as a condiment
  - Ground or whole, black, green or white (shell removed) peppercorns have varying warmth and flavor



# MORE SPICES

- **Saffron** is a rare and expensive spice made from the powdery stigma of a purple-flowered crocus
  - Used for color and flavor in rice, soups, seafood and poultry dishes
  - Popular in Indian, Italian and Spanish cuisines
  - Should be dissolved in a teaspoon of water before adding to dishes
- **Sesame** seeds have a slightly sweet taste, enhanced by toasting
  - Popular as toppings for breads and crackers
  - Tahini is a paste that is eaten alone or combined with chickpeas to make hummus



# A SPICE WITH RECOGNIZED HEALTH BENEFITS

- **Turmeric** comes from a root related to ginger with sharp, woody taste
  - Used in Indian cuisine for both taste and yellow/orange color
  - Turmeric provides a cheaper substitute for saffron
  - **Curcumin** is an active principle in the culinary spice turmeric <sup>1</sup>
  - Curcumin is both anti-inflammatory and antioxidant
  - Traditionally used for pain relief and immune support
  - Poorly absorbed for gastrointestinal tract it is best taken as standardized micronized curcumin with essential turmeric oil

<sup>1</sup> Mahashwari, RK et al *Life Sci* 78:2081, 2006



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# VANILLA

- Extract from the dried seed pods of *Vanilla Planifolia*, a plant belonging to the orchid family that grows in tropical climates
- Vanilla extract is the second most expensive extract after saffron <sup>1</sup>
- Sweet, rich scent and flavor
- Taste is broadly accepted and one least likely to become tired of compared with other flavors
- Added to baked goods, desserts, ice cream and coffee creamers



# FOOD PAIRINGS

- Tastes paired together enhance each other

- Sweet + Sour (key lime pie)
- Sweet + Salt (Prosciutto ham and melon)
- Spicy + Sweet (Pumpkin spice)



- Herbs and spices enhance most foods (chicken with tarragon, lamb with rosemary, fish with dill)



# BIOACTIVES IN FOODS

- Each day we are exposed to some 23,000 bioactive compounds <sup>1</sup>
- Some are beneficial and some are not
- Beneficial ones include botanicals and phytonutrients
  - Lycopene in tomato, guava and pink grapefruit
  - Alpha and beta glucans in mushrooms
  - Sulfur and seleno- proteins in cruciferous and allium vegetables
  - **Curcumin**

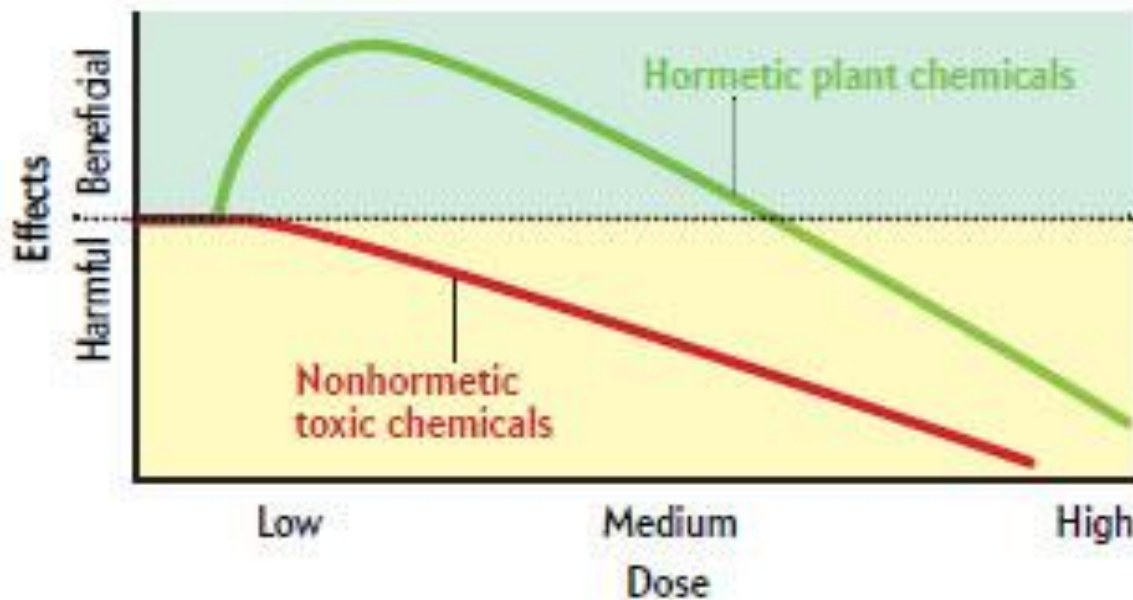
<sup>1</sup>Milner, JA In: *Herbal Medicine: Biomolecular and Clinical Aspects. Herbs and Spices in Cancer Prevention and Treatment*; CRC Press, Ch 17, 2011



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# First Good, Then Bad

Fruits and vegetables often contain low levels of toxic chemicals that provide health benefits when consumed in modest amounts but become increasingly noxious at high levels, a process called hormesis. The disparity in effects—traced on a biphasic response curve—contrasts with mercury and other nonhormetic toxic substances that are harmful at even low amounts.





# LABELING OF DIETARY SUPPLEMENTS

- The labeling and marketing of supplements is regulated by both FDA and FTC
  - The label of a dietary supplement is required to be truthful and not misleading
- General information:
  - Must include name and include the word supplement
  - Net quantity of contents
  - Name and place of business of manufacturer, packer or distributor
  - Directions for use

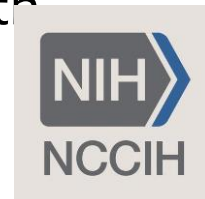


*The label of the supplement may contain a cautionary statement but the lack of a cautionary statement does not mean that no adverse effects are associated with the product*



# SUPPLEMENT RESOURCES

- Food and Drug Administration (FDA)  
[www.fda.gov](http://www.fda.gov) @US\_FDA
  - Report an adverse reaction
- NIH Office of Dietary Supplements  
[www.ods.od.nih.gov](http://www.ods.od.nih.gov) @NIH\_ODS
- National Center for Complementary and Integrative Health  
[www.nccih.nih.gov](http://www.nccih.nih.gov) (NCCIH) @NIH\_NCCIH
- Federal Trade Commission (FTC)  
[www.ftccomplaintassistant.gov](http://www.ftccomplaintassistant.gov) @FTC
  - Dietary Supplement Consumer Information
  - Deceptive advertising
- Independent testing from Consumer Lab  
[www.consumerlab.com](http://www.consumerlab.com) @ConsumerLab



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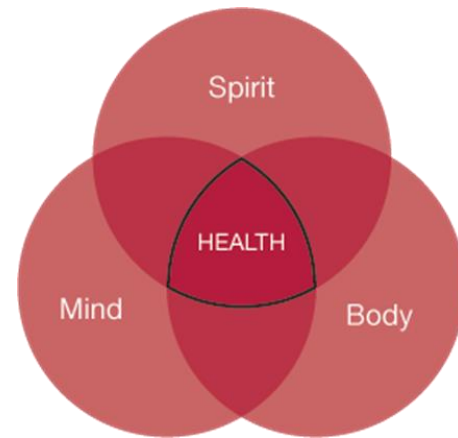


# Maintaining Wellness, Maximizing Health and Complementing the best Oncologic Practices and Scientific Research

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# INTEGRATIVE ONCOLOGY AND NUTRITION

- Integrative oncology blends conventional and complementary approaches including nutrition
- Recommended foods and supplements may include spices including ginger and curcumin
- To optimize wellness by balancing
  - MIND
  - BODY
  - SPIRIT
- Symptom management and stress reduction improves quality of life by
  - Reducing side effects during and after treatment
  - Helping to recover and maintain health and wellbeing



# NUTRITION A KEY CONCERN FOR MOST

## Causes for Concern

A diagnosis of cancer often triggers a whole slew of negative emotions, from sadness to panic. Below, some top patient concerns:

Eating, nutrition



Coping with feelings



Worrying about the future



Sleep problems



Feeling too tired



Source: Cancer Support Community:  
sample of 251 patients  
The Wall Street Journal



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# MINDFULNESS AND MEDITATION



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[www.marc.ucla.edu](http://www.marc.ucla.edu)

# WELLNESS AND PHYSICAL ACTIVITY

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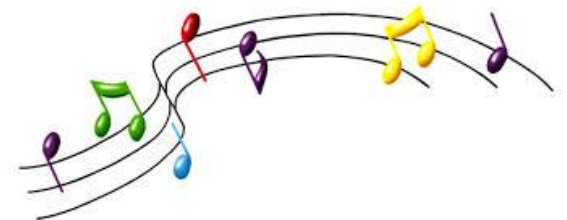


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## The Lotus as a Symbol of Rejuvenation and Spiritual Health



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