

## A Reason to Season: The Role of Spices in Health



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## Spices

Tropical or subtropical plant, or some part of it, valued for providing color, aromatic flavoring or stimulating odor for use in cooking.



## Culinary Herbs



Herbaceous plants valued for their aromatic flavorings in foods and beverages.

- Basil
- Thyme
- Oregano
- Rosemary
- Sage



- Antioxidant
- Antimicrobial
- Stimulate salivation
- Promote digestion
- Carminative

## Chilli or Chili (*Capsicum spp*)

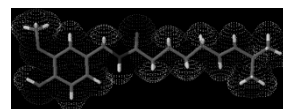


- Eaten in Americas since 7500 BC - one of first cultivated crops.
- Often used in soups for colds & sinusitis - their pungency increases mucus secretion in lungs and nose.
- Rich in vitamin C.

- Capsaicin & relatives are powerful topical analgesics.
- Studies confirm effectiveness for nerve pain and shingle pain.
- 0.025 and 0.075% strengths available. Must apply 3 x day. Can cause burning sensation. Avoid contact with eyes.



PLoS Med. 2005 Jul;2(7):e164



Capsaicin

## Chocolate (*Theobroma cacao*)

- Exotic, aromatic, medicinal spice.
- “Food of the gods”
- Mayans combined with vanilla and chilli (mole)



## Chocolate



- Flavonoids highest in cocoa powder and dark chocolate.
  - Antioxidant
  - Mild hypotensive
  - Cough suppressant
  - Look for chocolate at least 70% cocoa.

## Cinnamon

(*Cinnamomum verum*; *C. aromaticum*)

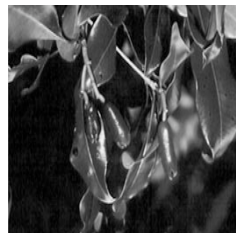


- German health authorities approve for “loss of appetite, dyspepsia, bloating and flatulence.”
- Effective anti-emetic.
- 1/2 tsp/day reduced fasting blood glucose in people with type 2 diabetes.

Khan, Diabetes Care 2003  
Altschuler, Diabetes Care 2007

## Cloves

(*Syzygium aromaticum*)



- From Latin “clavus” meaning nail.
- Worth more than weight in gold during 16th-17th centuries.
- Used in spice cakes, vindaloo, pickles, Worcestershire sauce.
- Smoked in aromatic cigarettes in Indonesia.

## Clove Bud



- Was prized as a flavoring agent, digestive aid, anti-emetic and aphrodisiac.
- Contains eugenol, an effective local anesthetic, and salicylic acid.
- Essential oil - as effective as benzocaine for dental pain
- Apply a few drops of clove bud essential oil on q-tip and apply to toothache.

## Fennel Seed

- German health authorities approve for “dyspepsia and upper respiratory infection.”
- Used in children for colds and colic.
- Clinical trial found chamomile, fennel and lemon balm reduced crying time in colicky infants.

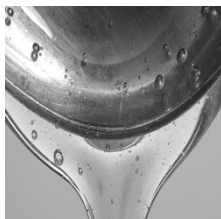


Savino, Phytother Res 2005

## Fennel Honey Syrup

2 Tbsp fennel seed  
1 tsp lemon juice  
1/2 cup water  
1/2 cup organic honey

Simmer on low heat for 15 minutes. Strain. Refrigerate up to 1 week. For coughs and colds kids 2 and up.



## Fenugreek (*Trigonella foenum-graecum*)

- Popular spice in Middle East, India and Far East.
- Component of curry.
- Used as artificial maple flavoring.



- The seeds contain mucilaginous fiber that is good for the bowel.
- Modest effects on serum glucose and cholesterol.
- Commonly used to stimulate breast milk.
- Eases sore throat and cough.



Table 1. Summary of Fenugreek Studies for Diabetes

Condition/Target Population/Outcome	Study Type	Author, Year	N	Statistically Significant Results?	Quality of Study (0-2-point 5-6-point 7-8-point)	Magnitude of Benefit (low strong in the effect?)	Adverse Risk Reduction	Number of Patients Included in Trial (n)	Comments
Type 2 diabetes, hyperlipidemia	Randomized, controlled, double-blind study	Gupta, 2001	25	Yes	3	None	NA	NA	Improved fasting glucose and C-peptide levels in patients with type 2 diabetes, without differences between groups. Reduced HbA1c and insulin resistance with fenugreek.
Type 2 diabetes	Randomized, crossover study	Rajkumar, 1994	10	Yes	1	Large	NA	NA	Improved peripheral glucose utilization with fenugreek seed supplementation.
Type 2 diabetes	Randomized, crossover study	Sharma, 1990	15	Yes	1	Small	NA	NA	Improvement in impaired glucose metabolism.
Type 2 diabetes	Cohort study with matched controls	Narain, 1990	12	Yes	1	Medium	NA	NA	Improvement of acute plasma glucose, most notable with raw fenugreek seed powder.
Type 1 diabetes, hyperlipidemia	Randomized, crossover study	Sharma, 1990	10	Yes	1	Large	NA	NA	Reduced blood glucose levels and C-peptide improved, serum lipids levels unchanged.

From Basch E. et al. Therapeutic applications of fenugreek. Alt Med Rev 2003; 8(1): 20-7

## Garlic (*Allium sativum*)



- Dietary garlic and onions reduce the risk of GI cancers.
- Protects GI mucosa
  - Studies show prevents GI toxicity from methotrexate
- Antimicrobial
  - *Entamoeba histolytica*
  - *Giardia lamblia*
  - *Salmonella*
  - *H. pylori*
- Anti-inflammatory

Hsing, et al. JNCI 2002; 94:1648-51

## Ginger (*Zingiber officinale*)



- Most widely cultivated spice
- Anti-inflammatory
  - Solid basic science, arthritis studies conflicting.
- Prokinetic agent – as part of getting patients off PPI; gastroparesis
- For coughs, congestion, colds
  - In vitro activity against a variety of rhinovirus.

## Ginger

- Review of six studies found 1-1.5 g/d dried ginger was effective for nausea and vomiting of pregnancy with little risk of harm.

Borrelli, *Obstet Gynecol.* 2005

- Some studies show that it is effective for motion sickness and chemotherapy related nausea and vomiting.

Chrubasik, *Phytomedicine* 2005



- Antagonist at ileal 5-HT<sub>3</sub> receptors
- A study in 24 healthy human volunteers found that 1200 mg dried ginger accelerated gastric emptying and stimulated antral contractions greater than placebo (Wu 2008).
- Both the acetone extract of ginger and ginger juice effectively reverse cisplatin-induced delay in gastric emptying.

J Ethnopharmacol. 1998  
Eur J Gastroenterol Hepatol. 2008

## Licorice Root (*Glycyrrhiza glabra*; *G. uralensis*)



- Gastroprotectant effects of licorice root known for centuries.
- Compounds in licorice increase local prostaglandin levels that promote mucus secretion and cell proliferation in the stomach.
- Licorice often found in herbal formulations for cough, colds, sore throat, GERD, gastritis or IBD.

Krausse, *J Antimicrob Chemother* 2004  
Rees, *Scand J Gastroent* 1979; 14:605-7

## Licorice



- Limit to 3 g/d root for short duration or 1 g/d long term.
- Deglycyrrhized licorice DGL (~400-800 mg before or between meals) is safe.

## Peppermint for Colds



- Peppermint is an effective expectorant, decongestant and is soothing for a sore throat.
- Mentholated rub on chest.
- Peppermint tea compress for headache/congestion.

## Peppermint Oil for IBS



- Review: 16 trials (651 patients IBS)
- 8/12 studies showed it was superior to placebo.
- 3/3 studies equivalent to smooth muscle relaxants.
- Adverse effect: heartburn & perianal burning.
- Dose 0.2 ml TID

Grigoleit, *Phytomedicine* 2005

## Sage (*Salvia officinalis*)

- German Comm E and ESCOP approve for excessive sweating.
- Small 8-week trial showed greater reduction hot flashes than placebo; extract equiv 1 g fresh sage.

Bioforce 2001



## Sage

- Long history of use as remedy for sore throats and cough.
- Phase II/III trial found 15% sage spray > placebo for relief of acute viral pharyngitis

Hubbert Eur J Med 2006



## Thyme (*Thymus vulgaris*)



- German Commission E approves for bronchitis and upper respiratory infection.
- Inhibitor of 5-LOX
- Studies demonstrate thyme reduces bronchitis symptoms

Gruenwald, Arzneimittelforschung 2005  
Buechi, Forsch Kompl Klass Natur 2005  
Prieto, Fitoterapia 2005

## Thyme



- Wide spectrum anti-bacterial activity in antibiotic resistant strains.

Hersch-Martinez, Fitoterapia 2005

- Potent anti-fungal - especially oral candidiasis.

Giordani, Phytother Res 2004

## Turmeric (*Curcuma longa*)



- Used as spice (curry) and medicinal agent at least 2000 years.
- Traditionally used for minor respiratory complaints, asthma and arthritis.
- Curcumin considered major active component.

## Turmeric



- Curcumin has potent anti-inflammatory activity.
  - COX and LOX inhibition.
- Doses of 760 mg – 2.0 g/day curcumin beneficial in preventing relapse in ulcerative colitis and Crohn's disease.
- 480 mg curcumin + 20 mg quercetin taken orally T1D reduced number and size of ileal and rectal adenomas in patients with FAP.

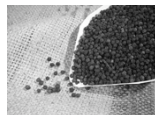
Hanai, Clin Gastroenterol Hepatol 2006

## Turmeric Safety

- The average daily intake of turmeric in India is approximately 2–2.5 grams/day, which corresponds to an intake of 60–100 mg of daily dietary curcumin (Goel 2008).
- Phase I clinical trials demonstrate that curcumin is safe at doses as high as 12 grams/day (Anand 2007).

Mol Pharm. 2007

Nutr. Food Res. 2008.



## Absorption

- *When curcumin was given to humans at doses of 2 grams – it yielded very low or undetectable serum levels.*
- *Concomitant administration of 20mg/kg piperine, a primary alkaloid in black pepper, increased bioavailability by 2000% (Shoba 1998).*

Planta Med. 1998

## Conclusion

Spices and culinary herbs have a vast array of valuable antioxidant, antimicrobial, anti-inflammatory, and cancer protecting compounds - making them an excellent addition to the diet.

There is a “*reason to season*”!

## Thank you !!!



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