Medicinal Value Of Common Indian Spices & Condiments - A Mini Review

[1]Saba Sabreen*, [2]Nahida Tabassum, [3]Mubashir H. Masoodi.
[1] Phd Scholar, [2] Professor, [3] Associate Professor.
Department of Pharmaceutical Sciences, School of Applied Sciences,
University of Kashmir-190006

Abstract:

Every Indian kitchen has characteristically a score of spices and condiments for seasoning food, and to enhance palatability. Their absence in food renders it bland and unattractive while their presence adds distinct flavor and pungency evoking peculiar attraction to the food. Every human being grows up with a specific experience of combined sensory stimuli provided by a specific and distinct combination of the spices and condiments. The spices and condiments are basically plant preparations comprising of seeds (Anise, cumin, caraway, fennel, cardamom etc.), fruits (Thyme, chilli), flower buds(clove), roots/rhizome (Ginger, Turmeric), stigmas (Saffron), Bark (cinnamon) or leaves (sweet bay, peppermint) etc.

This work is intended to review medicinal potential of commonly used spices and condiments and ,also take into consideration their toxic potential.

The active principles of the spices and condiments are largely mixture of terpinoids and medicinal potential of the spices is mostly attributed to their essential oil fraction. Some of the pungent, sharp tasting principles that render our food hot tasting are piperine (Black pepper), capsaicin(chillies), eugenol(clove), gingerol(ginger) elemicin (Nutmeg. Mace) etc. These are recognized to possess various activities as carminatives, stomachics, antispasmodics, expectorants, local analgesics, anti-diabetics, chemotherapeutic and as nervine agents.

Keywords:

Spices, Condiments,Terpenoids, Nervine agents, Anti-Diabetics, Analgesic

I. Introduction:

Indian kitchens have several vegetable preparations for use as spices, condiments or flavouring agents for seasoning food and to enhance acceptability of kitchen preparations. Their absence in our daily food stuff renders them bland while their presence adds colour, aroma, distinct flavor and pungency evoking peculiar attraction to the food. Each one of us grows with a specific experience of combined sensory stimuli provided by a specific and distinct combination of the spices- that extend distinctive characteristic to a given hand or to the kitchen.

The spices and condiments are basically plant preparations comprising of mostly seeds (anise, cumin, caraway, coriander, fennel, cardamom, fenugreek), fruits (capsicum, chillies, thyme), flower buds (clove), roots/rhizome (ginger, turmeric) or their dried exudate (asafoetida), bulb(garlic), stigmas (saffron), bark(cinnamon) or leaves (sweet bay, Peppermint). Fenugreek, peppermint and coriander leaves are also used as fresh herbs. The plants mostly belong to the family umbelliferae (Fasoyiro).

The active principles of the medicinal spices are largely mixture of terpenoids present in the essential oil/aromatic oil that adds distinctive flavor to the spice (Table 1). The spices also do contain some pungent principles, sharp-tasting chemicals, rendering the

food-stuff 'hot': piperine (pepper), capsaicin (capsicum, chillies), eugenol (clove, nutmeg), gingerol (ginger), elemicin (nutmeg, mace) and xanthorrhizol (turmeric). Medicinal potential of the most spices is attributed to their essential oil fraction (Evans) (Gokhale) (Ali).

The spices do not contribute significantly to human nutrition as these are used in smaller proportions. Their main utility is as flavouring, colouring, and/or seasoning agents to render food attractive and appetizing by evoking a combination of sensations: visual, gustatory and/ or olfactory.

II. Medicinal Potential:

The spices are recognized to possess a variety of medicinal activities include:

1) As Carminative and stomachic: The volatile or bitter principles reflexly stimulate secretions such as salivary, gastric and intestinal, stimulate bowel movements and relax sphincters to aid in evacuation of gases (carminative and antiflatulant). These actions result from irritation of sensory nerve endings through alimentary canal. This action is most prevalent in spices: Anise, caraway, clove, cinnamon, thyme, cardamom, coriander, peppermint, garlic, fennel, asafetida, capsicum, saffron, nutmeg, and black pepper (Evans) (Gokhale) (Ali) (Elakkiyam).
2) As Antispasmodic: spices like anise, asafoetida, saffron, caraway and thyme have earned reputation as antispasmodics over the years (Ali) (Gokhale) (Frawley)
3) As Expectorants: The Volatile principles of certain spices increase bronchial secretions either reflexly (irritating gasterointestinal nerve endings) or directly while being excreted vide respiratory epithelium. Asafoetida and garlic are very useful expectorants, as both contain irritant allyl disulphides. Thyme oil is useful in whooping cough. Basil is considered anti-tussive. Anise and peppermint are potential expectorants (Srinivasan) (Seema Gariola).
4) As Local analgesics and Antiinflammatory; The spices may be useful in relieving muscular or neuralgic pains because of counter-irritation that improves cutaneous circulation and produces anodyne effect. Black pepper has been used in rheumatic pains (Relaxyl, Algipan), and these or ginger as poultices are used to relieve headaches traditionally. Clove or its oil and saffron are potential dental analgesics. Garlic juice or pulp is used to relieve insect bites or to overcome itching (Farhana Tasleem) (Diego Francisco cortes Rojas) (M.)
5) As Antidiabetics and Antiobesity: The fenugreek seeds, garlic, onion, cardamom, cumin, saffron, turmeric, ginger etc are hypocholesterolemic, antihyperlipedimic and hypoglycemic so very beneficial for obese and diabetic patients (Kunnumakkara) (Sughosh vishweshar) (Zahra) (Saba Sabreen).
6) As Chemotherapeutic: Antiseptic, Anthelminthic, and insecticidal properties have been attributed to various spices: Asafoetida (antiseptic), Black pepper (piperine is more toxic to houselies than pyrethrum), Garlic (antiseptic,anthelminthic, insect repellent); caraway (anti bacterial and Anthelminthic), Thyme (more powerful antiseptic than peppermint; thyme oil is considered useful in ancyclostomiasis treatment) and cinnamon (Antibacterial and Antifungal) (Fatima Syed) (Meng) (oliver).
7) As Nervine Agents: Saffron, Black pepper and fenugreek are reputed as nervine tonics while as asafetida and basil are sedatives (Gokhale) (Ali) (Yarnell).
8) Miscellaneous: cinnamon exhibits Antidiarrhoel properties due to high tannin content. Basil acts as galactoge, Black pepper as diaphoretic and diuretic. A 2 % suspension of asafetida is repellent to cats, dogs, deer and rabbits. If the suspension is applied to the bandage of pet dogs, it prevents removal of bandage by dog, and if applied to feathers of birds, it prevents feather picking vice in chicken (Evans) (Ali) (Gokhale).

III. Toxic Potential:

" Excess of everything is bad". The spices are also safer to use when employed in small quantities. Over indulgence is associated with harmful effects:

1) Irritation: As a rule patients with gastric/duodenal ulcers, irritable colon, urinary tract problems and pregnant ladies should restrict or avoid extensive use of spices. Being irritant, these cause gastroenteritis, abdominal pain, burning sensations and painful or difficult urination. The notable spices with such effects include capsicum, black pepper, garlic and saffron (Sami).
2) Sensory desensitization: Chilli principle is known to damage sensory nerve endings to decrease gustatory responses and decrease response of respiratory tract to chemo-irritants (Capsaicin: A Chemical probe for sensory neuron mechanism).
3) Neurotoxicity: Nutmeg seeds are neurotoxicants owing to elemicin and myristicin, causing stupor, drowsiness, hallucinations and death. Egyptians have been using the seeds as substitute for hashish. Toxic dose for an adult man is in the range of 5-15 g (Hae) (Ahmed)

Thus, judicious use of the spices is mandatory to derive maximal benefits, and to avoid anticipated harms.

Table 1: Indian Medicinal Spices at a glance (Ali) (Gokhale):

Spice-Local Name	Source	Chief Principle(s)
Anise-valaiti saunf	Dried ripe fruit of *Pipinella anisum.*	Essential Oil (2-6%): anethole (80-90%)
Asafoetida-Heeng	Dried exudate from incised rhizome of *Ferula asafoetida*	Gum-resin: ferulic acid esters (60%)
Basil-Tulsi	Leaves and flowering tops of *Oscimum sanctum*	Essential Oil (0.1-0.45 %): methyl chavicol (c.a 55%)
Caraway-Shahizeera	Dried fruit of *carum carvi*	Essential oil (2.5-7 %): D-Carvone (50-80%)
Cardamom-Choti ellaichi	Ripe dry seeds of *Elletaria cardamomum*	Essential Oil (4-9 %): α terpinyl acetate and 1, 8 cineole (c.a. 50 %)
Clove-laung	Dry flower buds of *Caryophyllus aromaticus*	Essential Oil (14-20%): eugenol (72-90%)
Coriander-Dhania	Dry ripe fruits of *Coriandrum sativum*	Essential Oil (0.2%): d-linalool (50-70%)
Cumin-Zeera	Dry fruits of *cuminum cyminum*	Essential Oil: Cuminaldehyde (70-90%)
Cinnamon-Dalchini	Dry bark of *Cinamomum zeylanicum*	Essential Oil (1-2%): cinnamic aldehyde (70-90%)

Capsicum-Shimlamirch	Fruits of *Capsicum annum*	Oleoresin containing capsaicinoids (0.1-0.9%) containing capsaicin (ca. 70%)
Garlic- lahsun	Bulbs of *Allium sativum*	Essential Oil (0.1-0.9%): diallyl sulphides, sulphur containing amino acids and allicin.
Ginger-Saunth	Dry rhizome of *Zingiber officinale*	Essential Oil: gingerol (methoxy phenol)
Fennel-Saunf	Dry ripe fruit of *Foeniculum vulgare*	Essential Oil (2-7%): anethole (50-80%) and bitter variety contains fenchone (12-22%)
Fenugreek-Methidaana	Dry seeds of *Trigonella foenunumgraecum*	Essential oil (0.01%): trigonelline and choline.
Mace-Javitri	Dry drupe of *Myristica arillus*	Essential oil containing elemicin and myristicin.
Nutmeg-Jaiphal	Dry kernels of *Myristica fragrans.*	Essential oil containing myristcin and d-camphene and fixed oil containing trimyristin
Black pepper- kaalimirch	Dried unripe fruits of *Piper nigrum*	Piperine, caryophyllene, and l-phellandrene
Saffron-kesar	Dried stigmas of *Crocus sativus*	Crocin and picrocrocin variable composition
Bay leaf-Tejpatta	Dried leaves of *Laurus nobilis*	Essential oil: Eugenol(40-55%)
Turmeric-Haldi	Rhizome of *Curcuma longa*	Essential oil containing curcumins and sesquiterpene turmerone.
Thyme-Ajwain	Flowering tops of *Thymus vulgaris*	Essential oil containing thymol and carvacrol

References

- Ahmed, abdul wahab Rizwanul Haq Aftab. "Anticonvulsant Activities of Nutmeg Oil of Myrstica fragrans." *Phytotherapy Research* (2009): 153-158.
- Ali, Mohammed. *Textbook of Pharmacognosy*. New Delhi: CBS, 1994.
- "Capsaicin: A Chemical probe for sensory neuron mechanism." Nagy, James I. *Handbook of Psychopharmacology*. springer, n.d. 188-235.
- Diego Francisco cortes Rojas, Claudia Regina Fernandes de Souza Wanderley Periera. "Clove(Syzygium aromaticum): a precious spice." *Asian Pacific Journal of Tropical Biomedicine* (2014): 90-96.
- Elakkiyam, Sagaya Giri R. "Evaluation of Carminative Potential of some Indian spices." *World Journal of Pharmaceutical and Medical Research* (2018): 239-43.

- Evans, William C. "Trease and Evans Pharmacognosy." Evans, William. *Trease and Evans Pharmacognosy*. saunders/Elsevier, 2009.
- Farhana Tasleem, Iqbal Azhar et al. "Analgesic and anti-inflammatory activities of Piper nigrum L." *Asian Pacific Journal of Tropical Medicine* (2014): 461-468.
- Fasoyiro, S.B. "The value and Utilization of spice plants in Tropical Africa." *Journal of Agricultural and Food Information* (2014): 109-120.
- Fatima Syed, Raheela Taj, Nusrat shaheen. "Latent Natural Product And their potential Application as Anti-infective agents." *African Journal of Pharmacy and Pharmacology* (2014): 100-105.
- Frawley, David. *Ayurvedic Healing-A Comprehensive Guide*. Lotus Press, 2000.
- Gokhale, C K Kokate AP Purohit SB. *A Textbook of Pharmacognosy*. Nirali prakashan, 2008/9.
- Hae, BO Kyung Lee Jae. "Myristicin induced neurotoxicity in human neuroblastomanSK-N-SH cells." *Toxicology Letters* (2005): 49-56.
- Kunnumakkara, Ajaikumar B cemile koca. "Traditional Uses of Spices-An Overview." *Molecular Targets and Therapeutic Uses of Spices* (2009).
- L, James L. Chen Do Sami. "Spice Allergy." *Annals of Allergy asthama and Immunology* (2011): 1-9.
- M., Anilkumar. "Ethnomedical plants as anti-inflammatory and analgesic agents." *Ethnomedicine: a source of complimentary Therapeutics* (2010): 267-293.
- Meng, Qing Lin Xiao. "Antibacterial and Antifungal Activities of Spices." *International Journal of Molecular Sciences* (2017): 1283.
- oliver, Michael samuel Shune V. "The larvicidal effects of black pepper(Piper nigrum L.) and piperine against insecticide resistant and susceptible strains of Anopheles malaria vector mosquitos." *Parasites & Vectors* (2016): 238.
- Saba Sabreen, Mohammad Faizan Bhat and Mubashir Hussain Masoodi. "Indigenous/Locally available Herbal Drugs in J&K with Anti-Obesity Potential:A Review." *World Journal of Pharmaceutical Research* (2017): 476-483.
- Seema Gariola, Vikas Gupta Parveen Bansal et al. "Herbal Antitussives and Expectorants." *International Journal of Pharmaceutical Sciences and Research.* (2010).
- Srinivasan, K K. "Role of Spices beyond Food Flavouring: Neutraceuticala with multiple health effects." *Food Reviews International* (2005).
- Sughosh vishweshar, Pravinkumar et al. "Traditional Indian Spices Useful in Diabetes Mellitus-an updated review." *Journal of Pharmaceutical and BioSciences* (2013): 157-161.
- Yarnell, Kathy Abascal Eric. "Nervine Herbs for treating anxiety." *Alternative and Complimentary Therapies* (2004): 309-15.
- Zahra, Shirin Hasani Rnjbar. "A Systemic review of Anti-Obesity medicinal plants-an update." *J Diabetes metab disorders* (2013): 12:28.