

ESU 009– Herbs as functional supplements

Lecture 23



INTRODUCTION

- **India is the home of spices.**
- **Spices plays a significant role in the national economic status. spices are being consumed for flavouring foods, medicine, pharmaceutical, perfumery, cosmetics etc.**
- **Spices act as antioxidants and play a beneficial role in human health.**
- **Various phytochemicals present in spices show antimicrobial and medicinal properties.**

What are spices and herbs:

They are derived from latin “ Species aromatacia” meaning fruits of earth and term “spice” means any aromatic vegetable substance in whole, broken or ground form

- > Spices – natural products, widely accepted by consumers.
- > It may be leaves, root, bark, Stem, bud ,seed or fruit with variety of fragnancy, aromaticity & pungency.

- Large valued for essential oils, oleoresin & oleo gum resins which bequeaths an aroma & flavor to food with an undeniable psychological as well as physiological effect.

- Herbs are the leaves & sometimes the flowers of plants, usually grown in a climate similar to the Mediterranean

Eg: Garlic, onion, ginger, etc.

CLASSIFICATION OF SPICES

1. Major Spices:

Eg:- Black pepper, Cardamom, Chillies, Ginger & Turmeric.

2. Seed Spices:

Coriander, Mustard etc.

3. Tree Spices:

Nutmeg , Cinnamon, Allspice, Curryleaf etc.

4. Herbal Spices:

Thyme, Basil, Oregano, Rosemary

5. Miscellaneous Spices:

Garlic, Saffron, Vanilla

Aldehydes: it include citral, benzaldehydes etc.

Terpene & Terpene derivatives: These are major component of essential oil in spices. Carotenoids are also terpene derivatives such thymole, a preservative compound of Thyme.

Glycosides : These are made up of a sugar molecules & a non-sugar part called glycon. Eg. :- Mustard oil glycoside.

S. no.	Minerals	Spices
1	Calcium	cumin, coriander, Fennel
2	Iron	Green chillies, Dried red Chillies
3	Phosphorus	Mustard, cumin, Coriander
4	Mangenesese	Pepper
5	Copper	Pepper
6	Zinc	Fenugreek
7	Sodium	Chilli powder
8	Magnesium	Cumin, Fennel, Chilli

Role of spices in food:

1. Used as Flavoring agents
2. Enhance the flavors of foods
3. Posses antioxidant properties
4. Used as preservatives
5. Pungent spices can cause sweating
6. Posses strong antimicrobial properties
7. Used as colorant

Microorganism inhibited by spices and herb:

Spice/ Herb	Microorganisms inhibited
Garlic	Salmonella typhimurium, E. coli, Staphylococcus aureus, Bacillus cereus
Onion	Aspergillus flavus, Aspergillus paraciticus
Cinnamon	Mycotoxinogenic aspergillus flavus
Cloves	Mycotoxinogenic aspergillus flavus
Mustard	Mycotoxinogenic aspergillus flavus
Bayleaf	Clostridium botulinum
Thyme	Vibrio parahaemolyticus
Rosemary	Staphylococcus aureus,
Black pepper	Enterococcus faecalis
Turmeric	Bacillus cereus, E. coli, Staphylococcus aureus,
coriander	Staphylococcus aureus, E. coli, Enterococcus faecalis

Spices & Herbs	Antimicrobial agent	Inhibitory effect
Rosemary	Broneol, cineol, camphor, thymol	Medium
Mustard	Allyl and related isothiocyanates	Strong
Cinnamon	Eugenol, cinnamon aldehyde	Strong
Clove	Eugenol	Strong
Basil	Methyl chavicol, linalyl	Medium
Fennel	Essential oil, anethole	Medium
Cumin	Limonene	Medium
Celery	Limonene	Medium
Ginger	Gingerol	Weak
Coriander	Essential oil, limonene, linalyl	Medium
Pepper	Piperine, chavicol	weak

Antimicrobial activity depends upon:

1. Kind of Spice
2. Composition & Concentration of Spice
3. Microbial Species and its occurrence
4. Substrate Composition
5. Processing conditions & Storage

Medicinal Properties:

Spice	Medicinal properties
All spice	Stimulant and Digestive
Basil, sweet	Antipyretic, stimulant diuretic
Celery	Stimulant, tonic, diuretic, anti-inflammatory
Coriander	Carminative, diuretic, analgesic, stimulant, anti-inflammatory
Fennel	Stimulant, carminative
Mint (peppermint)	Stimulant, antiseptic
Rosemary	Mild irritant, stimulant
Thyme	laxative, tonic

Antioxidant Isolated From Herbal Spices:

Spice	Antioxidants
Rosemary	Carnosic acid, carnosol, rosemarinic acid, rosmanol
Oregano	Derivatives of phenolic acid, flavonoids, tocopherols
Thyme	Carvacrol thymol, caryophyllene, carvone, borneol
All spice	pimentol

Antioxidant activity of spices:

- Spices such as rosemary, thyme, clove and ginger attribute their antioxidant activity to phenolic compounds.
- Cinnamon, turmeric, black pepper, garlic, ginger and onions exhibit antioxidant properties.
- Antioxidant properties of spices is due to presence of flavinoids, terpenoids, lignans and polyphenolid.

Thank you

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