



CATOLICA  
ESCOLA SUPERIOR DE BIOTECNOLOGIA

PORTO



Erasmus+

**Integration of good practices and new methods for professional training  
in the field of herbs processing for food and food supplements  
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# **CHAPTER 5**

## **SPICES & CULINARY HERBS FOR A BETTER HEALTH**

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## 5.1. Nutritional profile

### Complementary and Alternative Medicine

- applying specific treatments,
- believed to be beneficial for disease prevention and public health
- employs techniques and methods such as using natural plants,
- reducing the contact with chemical substances
- therefore, negative impacts on health and toxicity
- however, in general, the activity of medicinal plants is not as instant as the conventional drugs, so it is generally advisable to supplement a supporting element with each other, to bear most desirable effects.

## **Important bioactive compounds in herbs and spices**

- Phenolic acids,
- Flavonoids,
- Carotenoids
- Vitamins
- Stilbenes and lignans
- Alkaloids
- Tanins
- Volatile oils
- ...



## Active plant constituents in herbs and spices

- - Acids: these are sour, often antiseptic and cleansing;
- - Alkaloids: these are bitter, often based on alkaline nitrogenous compounds. They affect the central nervous system and many are very toxic and addictive;
- - Anthraquinones: these are bitter, irritant and laxative, acting also as dyes;
- - Bitters: various compounds, mainly iridoides and sesquiterpenes with a bitter taste that increases and improves digestion;
- - Coumarines: these are antibacterial, anticoagulant;

## Active plant constituents in herbs and spices

- Flavones: these are bitter or sweet, often diuretic, antiseptic, antispasmodic and anti-inflammatory. Typically yellow and present in most plants;
- - Glycosides: there are four main kinds of glycosides:
  - Cardiac: affecting heart contractions
  - Synogenic: bitter, antispasmodic sedative, affecting heart rate and respiration
  - Mustard oil: acrid, extremely irritant
  - Sulphur: acrid, stimulant, antibiotic;

## Active plant constituents in herbs and spices

- - Gums and mucilages: these are bland, sticky, soothing and softening;
- - Resins: these are acrid, astringent, antiseptic, healing;
- - Saponins: these are sweet, stimulant hormonal, often anti-inflammatory, or diuretic, soapy in water;
- - Tannins: these are astringent, often antiseptic
- - Volatiles oils: these are aromatic, antiseptic, fungicidal, irritant and stimulant.

Clove	Phenolic acids (gallic acid), flavonol glucosides, phenolic volatile oils (eugenol, acetyl eugenol), tannins
Ginger	Shogoal, gingerol
Mace	Myristphenone
Marjoram	Beta-carotene, beta-sitosterol, caffeic-acid, carvacrol, eugenol, hydroquinone, linalyl-acetate plant 3–17, myrcene, rosmarinic-acid, terpinen-4-ol
Nutmeg	Myristphenone, phenolic volatile oils, phenolic acid (caffeic acid), flavanols (catechin)
Oregano	Caffeic acid, p-coumaric acid, rosmarinic acid, caffeoyl derivatives, cavacrol, flavonoids
Red pepper	Beta-carotene fruit, beta-sitosterol plant, caffeic acid campesterol, camphene fruit, capsaicin fruit, capsanthin fruit, chlorogenic-acid fruit, eugenol fruit, gamma-terpinene fruit, hesperidin fruit, myristic acid
Rosemary	Carnosol, 12-O-methylcarnosic, rosmanol, caffeic acid, rosmarinic acid, caffeoyl derivatives, phenolic diterpenes (carnosic acid), carnosol, epirosmanol, flavonoids
Sage	Rosmanol, epirosmanol, phenolic acids (rosmarinic acid), phenolic diterpenes (carnosic acid), flavonoids
Sesame seed	Sesaminol, $\alpha$ -tocopherol, sesamol
Turmeric	Curcumin, 4-hydroxycinnamoylmethane
Thyme	Phenolic acids (gallic acid, caffeic acid, rosmarinic acid), thymol, phenolic diterpenes, flavonoids

## Benefits of herbs for health and nutritional profile

### ROSEMARY



Excellent source of vitamins (B1, B2, E, C, and folate), and minerals (potassium, calcium, sodium and phosphorus). In the case of compounds carnosol, cineole, geraniol,  $\alpha$ -pinene,  $\beta$ -carotene, apigenin, limonene, naringin, luteolin, caffeic acid, rosmarinic acid, vanillic acid and rosmanol.

- Stimulates the liver function, facilitates digestion, indicated to fight physical and mental fatigue and depression.
- Features antioxidant capacity and helps in blood circulation. Should not be used in situations of diarrhea.
- In high concentrations, can cause gastrointestinal irritation and nephritis.

## **Benefits of herbs for health and nutritional profile**

### **FENNEL**



Provides vitamins (A and B3) and minerals (calcium, potassium, magnesium and phosphorus).

- Works in the digestive system, increases peristalsis and reduces the production of gases.
- Favors bronchial secretion by removing excess mucus from the respiratory tract.
- Their level of potassium salts gives it diuretic properties.

## Benefits of herbs for health and nutritional profile

### MINT



Rich in vitamins A, B, C and minerals (calcium, phosphorus, iron and potassium).

- Herb decongestant.
- Its infusion is indicated for the treatment of influenza.
- Avoid situations of heartburn and indigestion.
- Helps in relieving abdominal pain and muscle aches.

## Benefits of herbs for health and nutritional profile

### CELERY



Excellent source of vitamins (A, B1, B2, B5, C, E), magnesium, potassium and iron.

- Assists in digestion, suitable for situations of flatulence (gas), arthritis, high blood pressure, cholesterol, diabetes, works as a diuretic and anti-inflammatory properties.

## Benefits of herbs for health and nutritional profile

### PARSLEY



Contains vitamins (A and C), minerals (calcium, iron, magnesium, sulphur and potassium) e bioflavonoids.

- It is diuretic.
- Combats the formation of gases.
- It relieves the symptoms of bronchitis, asthma, menstrual cramps.
- Assists in the treatment of kidney stones.

## Benefits of herbs for health and nutritional profile

### LAUREL



Rich in volatile essential oil, composed by 45% cineol; also contains high levels of tanins

- It is diuretic.
- Digestive.
- Helps in the treatment of hemorrhoids and rheumatism.

## Benefits of herbs for health and nutritional profile

### BASIL



Rich in essential oils, vitamins C and A.

- Exerts some influence in relation to preventive skin and stomach cancer.
- Inhibition of enzymes associated with diabetes.
- Has anti-aging effect due to high levels of polyphenols.

## Benefits of herbs for health and nutritional profile

### GARLIC



Provides vitamins (B1, B2, C, pro-vitamin A and e) and minerals (selenium, calcium, iodine, sodium and iron).

- Prevention of cardiovascular disease: reduction of serum concentrations of LDL, triglycerides, blood pressure reduction, inhibition of platelet aggregation.
- Should be avoided in cases of gastric ulcer, dyspepsia, cystitis, vision problems and skin (rashes, eczema).

## **5.2 Aromatic plants the alternatives to salt and sugar**

**Inclusion of herbs in the diet as an excellent substitute  
for salt**



## 5.2 Aromatic plants as alternatives to salt

- Excessive consumption of sodium has been associated with negative health effects, the most alarming being elevated blood pressure
- Hypertension is a major risk factor for cardiovascular disease, the leading cause of death worldwide



- Moderation of consumption or its replacement by other healthy elements is a fundamental step, either for prevention or for treatment
- The World Health Organization (WHO) has already come to question and raise awareness to the excessive consumption of salt in many countries
- the average salt intake for adults is 10.7 g/day, an amount that significantly exceeds the 5 g/day recommended as maximum

## **5.2 Aromatic plants as alternatives to salt**

- One of the excellent properties associated to spices and culinary herbs is their distinctive flavor that can replace elements that we use daily in the kitchen, namely SALT
- Several studies show the importance of the inclusion of spices and herbs in food as a great salt substitute
- Due to their nutritional composition and the health benefits, spices and herbs not only provide more refined palate, soft and fresh with meals, as well as color and aroma.

## Examples of how to use Spices and Culinary Herbs instead of salt

Garlic Powder: Use in meats, poultry, fish, vegetables, salads, soups, and stews.

Ginger: Use in soups, salads, vegetables, and meats.

Lemongrass: Use in soups, stews, meats, poultry, seafood, and sauces.

Marjoram: Use in soups, salads, vegetables, beef, fish, and poultry.

Nutmeg: Use in vegetables and meats.

Onion Powder/Green Onion: Use in meats, poultry, seafood, soups, and salads.

Oregano: Use in soups, salads, vegetables, meats, and poultry.



## Examples of how to use Spices and Culinary Herbs instead of salt

Paprika: Use in meats, fish, poultry, and vegetables.

Parsley: Use in salads, vegetables, fish, and meats.

Rosemary: Use in salads, vegetables, fish, and meats.

Saffron: Use in breads, snacks, soups, stews, poultry, seafood, sauces, and rice.

Sage: Use in soups, salads, vegetables, meats, and poultry.

Thyme: Use in salads, vegetables, fish, and poultry.

Anise: Use in breads, snacks, soups, stews, vegetables, meats, and poultry.