

Ministry of Higher Education
 Salahaddin University-Erbil
 College of Agricultural Engineering Sciences
 Field Crops and Medicinal Plants Department



Medicinal Plants based on Taxonomy

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Instructor: Assist Prof. Dr. Saber Wasman Hamad

email: saber.hamad@su.edu.krd

Lecture 5



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Medicinal Plants based on Taxonomy

Plants are divided into families in which similarly related plants are grouped together basic on the clear similarity of morphological characteristics .

Families may contain one genus or a large number. A genus may similarly contain one species or a large number of related individuals – for example the Rosmarinus genus contains just two species.



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Most of the medicinal and aromatic plants belong to the following families:

-Compositae - Labiatae - Umbelliferae -
 Leguminosae - Roseaceae - Rutaceae -
 Solanaceae - Cruciferae - Liliceae -
 Caryophyllaceae- Boraginaceae -
 Ranunculaceae - Papaveraceae - Malvaceae -
 Cucurbitaceae - Verbenaceae -
 Scrophulariaceae – Phytolaccaceae-Poaceae.



Archangelica officinalis

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A. Medicinal plants of the Compositae family

The Compositae family, also known as the Asteraceae family, contains the highest number of medicinal plants as compared to other families. Medicinal plants belonging to this family include for example:

Chamomile: *Matricaria chamomilla*

Is an annual herb found in Europe, North Africa and northern Asia. Chamomile comes from the Greek words chamos meaning ground and milos meaning apple.



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Medicinal Uses and Health benefits

Chamomile is often used to treat nervous disorders such as insomnia, anxiety and nervous tension, as anti-allergy and chamomile to treat digestive problems.

Parts Used: The entire above ground portion of the plant can be used.

The flowers are edible and can be used raw to top salads.



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Chicory: *Cichorium intybus*



Habitat: Chicory is found growing wild in Europe, North Africa, and West Asia. It has been introduced to North America, where it has locally become naturalized.

Plant Parts Used: It is primarily the root that is used, but occasionally the whole plant.

In today's herbal medicine chicory is considered to be of particularly great value as a tonic for the liver and gastrointestinal tract.

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Milk thistle, holy thistle, blessed thistle: *Silybum marianum*

Habitat: *Silybum marianum* is native to a narrow area of the Mediterranean, but has been naturalized throughout Europe and along the chaparral coastal area of California in the United States.

Its preferred habitat is a dry, sunny area.

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Silybum marianum

Plant Parts Used: Commonly, the seeds; however throughout history virtually all the aboveground parts of the plants have been used as both food and medicine.

The active constituents of milk thistle are **flavonoids** (silybin, silydianin, and silychristin).

Medicinal Uses and Health benefits milk thistle seeds have been used for the treatment of liver disease.

Milk thistle is referred to in the earliest Greek writings as a liver-protecting herb.



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B. Medicinal plants of the Labiatae family

A very important medicinal plant family is the Labiatae family, also known as the mint family.

Plants in this family are herbs or shrubs often with an aromatic smell.

They are common in the Mediterranean countries for the fact that some of them produce a high amount of essential oil that enables them to survive the hot summer season. Some examples from this family include the spearmint and rosemary.

Examples:



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Rosemary: *Rosmarinus officinalis*

Habitat: Rosemary is native to the Mediterranean countries but is now grown worldwide as a spice and medicinal herb.

The plant thrives best in a warm sunny climate.

Plant Parts Used: Leaves, flowers, stems, branches.



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Medicinal Uses and Health benefits

1- Rosemary has long been thought to prevent premature balding and even aiding new hair growth.

2- It has been infused into many shampoo products as an aid in fighting dandruff.

3- Rosemary has had a long-lived reputation for improving memory. Some studies claim that the carnosic acid found in rosemary may shield the brain from free radicals. Lowering the risk of strokes and neurodegenerative diseases like Alzheimer's disease, dementia.



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spearmint: *Mentha spicata*

Habitat: The spearmint plant is native to Europe, but it grows well in most temperate climates. Its common name is related to the pointed shape of its leaves that resemble a spear.

Plant Parts Used: The leaves are the parts of the plant that are used for their essential oils that contain menthol and flavonoids.

Medicinal Uses and Health benefits: Speeds Wound Healing, Relieves Spasms and Disinfectant.



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C. Medicinal plants of the Umbelliferae also known as Apiaceae family

The Umbelliferae or carrot family consists of plants with a characteristic umbrella-arranged fruit. These plants usually produce an essential oil, an asset to survive during the hot summer days.

In fact the oil has a cooling effect on the plant. Some examples are anise (*Pimpinella anisum*), parsley (*Petroselinium crispum*), and hemlock (*Conium maculatum*) which are considered one of the most poisonous.



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Parsley (*Petroselinium crispum*)

Habitat: Originally, parsley was probably endemic to Southwest Asia and the Mediterranean (Turkey, Algeria, Sardinia, and Lebanon). The herb has been cultivated since ancient times and was early on widely grown in most parts of Europe. Today, the plant is extensively used as a spice and cultivated all over the world.

Plant Parts Used: The whole plant is utilized either as medicine or food. The leaves are used fresh or dried as a seasoning and garnish while the root and seeds are primarily used as herbal medicine.



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Medicinal Uses and Health benefits

- 1- A diuretic Herb.
- 2- useful in the treatment of anemia (anemia). The herb also contains the much needed folic acid, a vital building block of the red blood cells.
- 3- Studies have shown that vitamin K is vital in bone formation, protects against osteoporosis.



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Coriander: *Coriandrum sativum*

Habitat: Coriander is indigenous to the Mediterranean countries and today most of the commercial supply of the herb comes from Morocco, Romania, and Egypt.

Plant Part Used: Seeds, and leaves.

Medicinal Uses and Health benefits: 1-is considered a natural treatment for high cholesterol levels. 2- As an appetizer and has been used to increase appetite in those suffering from anorexia.



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fennel: *Foeniculum vulgare*

Habitat: Fennel is circumpolar (that is, can be found all over the globe). It is most often found in dry stony calcareous soils near the sea.

Plant Parts Used: Primarily the seeds and an essential oil extracted from them; leaves and root are also used.



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Medicinal Uses and Health benefits

To treatment of irritable bowel syndrome (IBS), gout, motion sickness, cramps, and spasms. Fennel is thought to be an effective herbal remedy for respiratory congestion and is a common ingredient in cough remedies.



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D. Medicinal plants of the fabaceae family

The Leguminosae or pea family consists of large number of plants, both native and naturalized, that have been cultivated for fodder, food and ornamental purposes. Amongst these plants, alfalfa (*Medicago sativa*) and fenugreek (*Trigonella foenumgraecum*).

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Trigonella foenum-graecum

Habitat: Fenugreek is native to the Mediterranean countries and western Asia and is undoubtedly one of the oldest cultivated plants.

Plant Parts Used: The leaves and seeds. The leaves are picked in the summer and used fresh.

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Medicinal Uses and Health benefits

- 1- The Fenugreek leaves and seeds are used as a remedy for kidney stones.
- 2- Fenugreek has been used for skin irritation, such as ulcers, eczema, dandruff.

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E. Medicinal plants of the Solanaceae family

A family with several poisonous, but medicinally-important herbs is the Solanaceae or potato family.

A species in this family that is widely cultivated (*Solanum tuberosum*). Other cultivated edible crops are the tomato (*Lycopersicon esculentum*) and the aubergine (*Solanum melongena*). The potato is only edible when ripe, as green potatoes were found to be poisonous.



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E. Medicinal plants of the Solanaceae family



Datura stramonium



Withania somnifera

Mediterranean natives in this family include the Mediterranean withania (*Withania somnifera*) and garden thorn apple (*Datura metel*).

Other important species include black nightshade (*Solanum nigrum*) . - Mediterranean withania (*Withania somnifera*). - Stramonium (*Datura stramonium*) - Black nightshade (*Solanum nigrum*).



Solanum nigrum

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Capsella bursa-pastoris



F. Medicinal plants of the Cruciferae family

The Cruciferae or cress family is characterised by plant that have flowers with cross-like petals.

This family groups a large group of medicinal plants that include: Shepherd's purse (*Capsella bursa-pastoris*), Black mustard (*Brassica nigra*), Arugula (*Eruca sativa*), London rocket (*Sisymbrium irio*), Wild radish (*Raphanus raphanistrum*).

Two examples:

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London rocket *Sisymbrium irio*

Habitat: is native to southern Europe, North Africa and temperate Asia but has been carried by migrants to North America, Australasia and South Africa.

Plant Parts Used: seeds and leaves.

Medicinal Uses and Health benefits: London rocket is used in the Middle East to treat coughs and chest congestion, to relieve rheumatism, to detoxify the liver and spleen, and to reduce swelling and clean wounds.



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Shepherd's purse: *Capsella bursa-pastoris*

Habitat: The plant is probably native to Europe and parts of Asia, but now it can be found in temperate regions around the world.

Plant Parts Used: All of the above-ground parts of the plant are used in herbal medicine.

It is collected when it is in bloom and can be dried for later use.



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Medicinal Uses and Health benefits

1-Shepherd's Purse uses to stop bleeding and as a healing agent.

2- Shepherd's purse is mainly used in Chinese herbal medicine to "cool the blood," and as a treatment for dysentery, high blood pressure and excessive bleeding after birth.



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G- Medicinal plants of the Poacea family

Grass family (Poaceae), one of the largest plant families with almost 12,000 species, is the most important plant family in economical view.

Today, grasses are used also in pharmaceutical industry and in cosmetic industry, in products like powders and various creams.

Plant drugs of grass family are recognised as medically and therapeutically useful, and with further research their use in medicine will be more important.

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Lemon grass: *Cymbopogon citratus*

Habitat: perennial grass, which is native to India and tropical regions of Asia. **Plant Part used:** leaves

Medicinal Uses and Health benefits:

- 1- Lowers Cholesterol
- 2- Detoxifies the Body
- 3- Prevents Cancer (Research conducted to prove the anti-cancerous activity of lemongrass has shown promising outcomes in the prevention of skin cancer.)

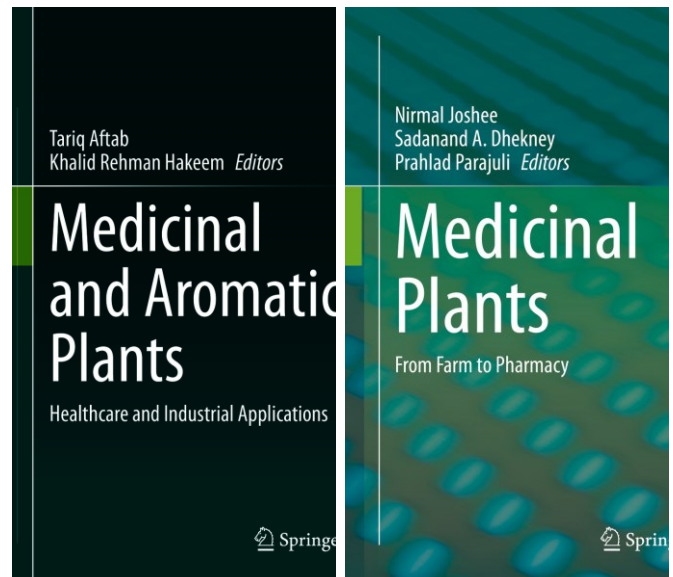


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