

## Pharmacognosy

The branch of knowledge concerned with medicinal drugs obtained from plants or other natural sources.

The American Society of Pharmacognosy defines pharmacognosy as "the study of the physical, chemical, biochemical, and biological properties of drugs, drug, including botany, ethnobotany, marine biology, microbiology, herbal medicine, chemistry, biotechnology, phytochemistry, pharmacology, pharmaceutics, clinical pharmacy and pharmacy practice.

The term "pharmacognosy" was used for the first time by the Austrian physician Schmidt in 1811.

Pharmacognosy is the study of medicines or crude drugs produced from natural sources such as plants, microbes, and animals. It includes analysis of their biological, chemical, biochemical, and physical properties.

- medical ethnobotany: the study of the traditional use of plants for medicinal purposes;

- ethnopharmacology: the study of the pharmacological conditions of medicinal plants.



Plants synthesize a variety of phytochemicals, but most are derivatives:

- Alkaloids are a class of chemical compounds containing a nitrogen ring. Alkaloids are produced by a large variety of organisms, including bacteria, fungi, plants, and animals, and are part of the group of natural products (also called secondary metabolites). Many alkaloids can be purified from crude extracts by acid-base extraction. Many alkaloids are toxic to other organisms.

- Polyphenols (also known as phenolics) are compounds that contain phenol rings. The anthocyanins that give grapes their purple color, the isoflavones, the phytoestrogens from soy and the tannins that give tea its astringency are phenolics.



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- Glycosides are molecules in which a sugar is bound to a non-carbohydrate moiety, usually a small organic molecule. Glycosides play numerous important roles in living organisms. Many plants store chemicals in the form of inactive glycosides. These can be activated by enzyme hydrolysis, which causes the sugar part to be broken off, making the chemical available for use.
- Terpenes are a large and diverse class of organic compounds, produced by a variety of plants, particularly conifers, which are often strong smelling and thus may have had a protective function. They are the major components of resin, and of turpentine produced from resin. When terpenes are modified chemically, such as by oxidation or rearrangement of the carbon skeleton, the resulting compounds are generally referred to as terpenoids. Terpenes and terpenoids are the primary constituents of the essential oils of many types of plants and flowers. Essential oils are used widely as natural flavor additives for food, as fragrances in perfumery, and in traditional and alternative medicines such as aromatherapy. Synthetic variations and derivatives of natural terpenes and terpenoids also greatly expand the variety of aromas used in perfumery and flavors used in food additives. The fragrance of rose and lavender is due to monoterpenes. The carotenoids produce the reds, yellows and oranges of pumpkin, corn and tomatoes.



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- medical ethnobotany: the study of the traditional use of plants for medicinal purposes;
- ethnopharmacology: the study of the pharmacological qualities of traditional medicinal substances;
- the study of phytotherapy (the medicinal use of plant extracts); and
- phytochemistry, the study of chemicals derived from plants (including the identification of new drug candidates derived from plant sources).
- zoopharmacognosy, the process by which animals self-medicate, by selecting and using plants, soils, and insects to treat and prevent disease.
- marine pharmacognosy, the study of chemicals derived from marine organisms.

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