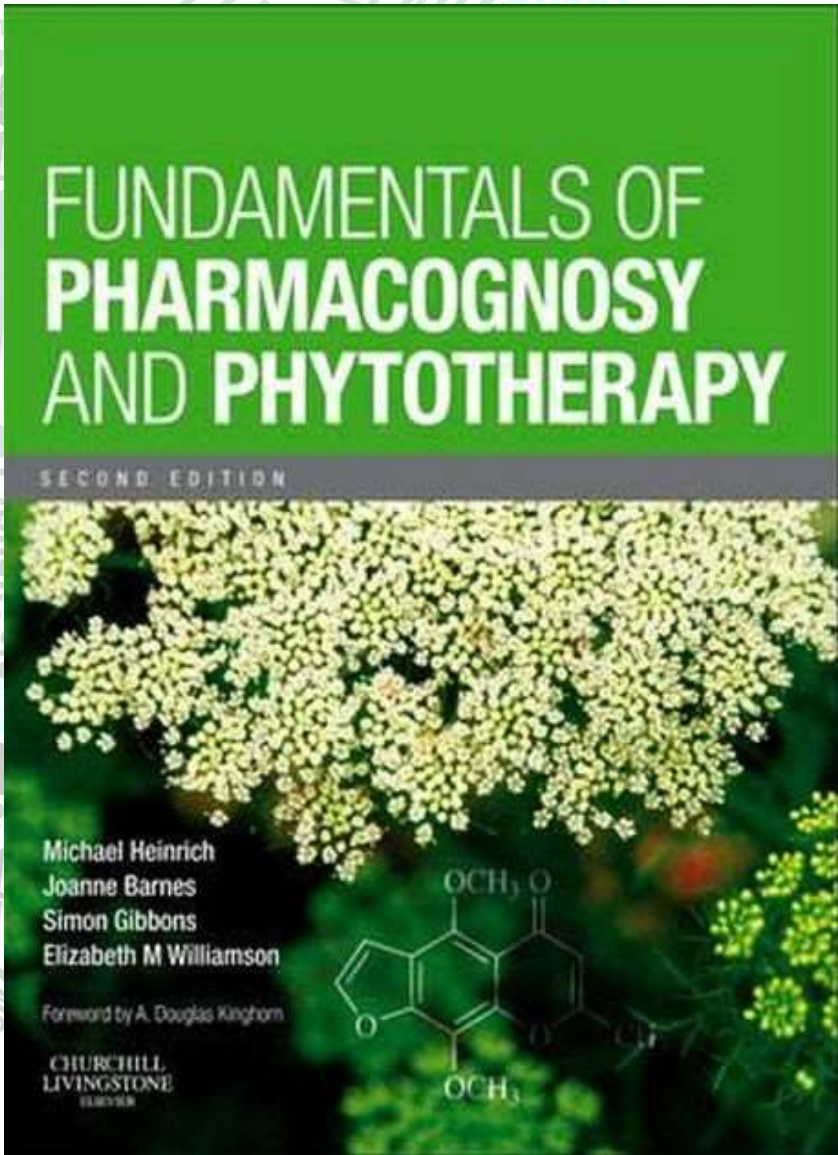
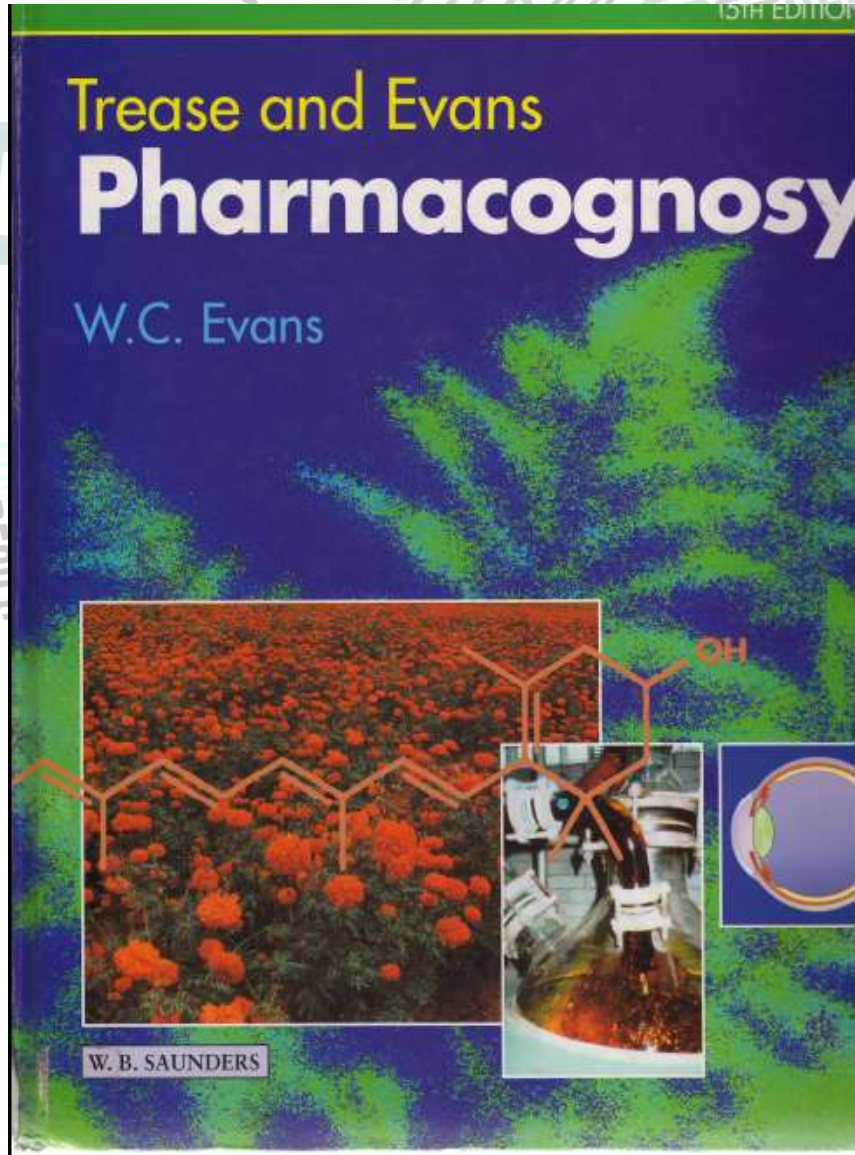


Dr. Ula Al-Mousawi  
Depat: Pharmacognosy



# References in Pharmacognosy



# Syllabus

## Introduction

Scope of Pharmacognosy

Definition & basic principles

## Classification of natural drugs

## Production of crud drugs

Cultivation

Collection

Drying

Storage

## Chemistry of Natural Products

## Drug deterioration

## Quality control

## Phytochemical investigation of herbal products

## Tissue culter

# What the main of Pharmacognosy



## Pharmacognosy

Definition

Is the study of medicines derived from natural sources.



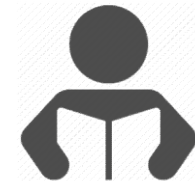
Origin

It is derived from two Greek words:

**pharmakon** = a drug



**gnosis** = acquire knowledge





# Ancient civilizations

Pharmacognosy has developed from ancient civilizations & used parts from local flora  & fauna  for their survival.



By **trial & error**, the primitive man had acquired biologic knowledge that was useful in determining which **plant** & **animal** possessed food value



& which of them to be avoided because they were **unpalatable, poisonous** or **dangerous**.



# History of Pharmacognosy



**Mesopotamia** made a clay model of the human body & early writing indicate that they were aware of a medicinal effects of many of plants.



**Ancient Egyptians** possessed a knowledge of a medicinal uses of many plants, like **Morphine** from opium in *Papaver somniferum* which used as **hypnotic and analgesic**.

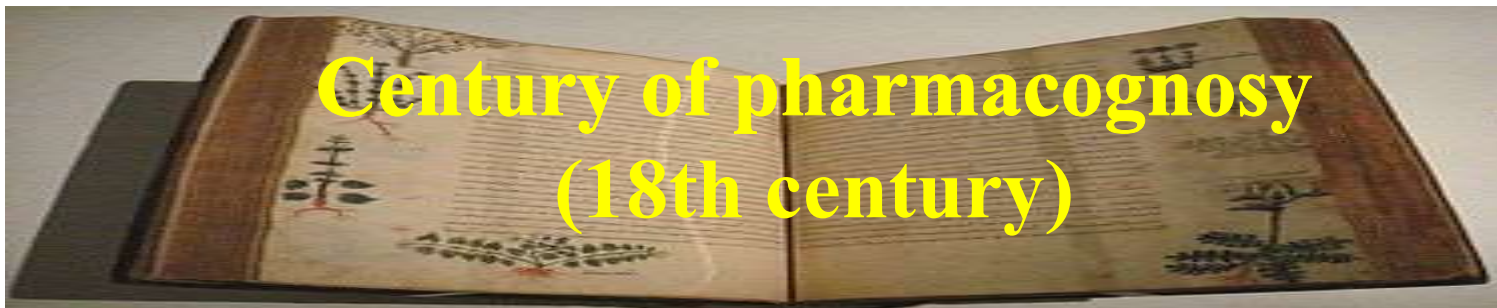


**Greece and Rome** describes many plants that were known to have medicinal properties such as **atropine & hyoscine** which used as **mydriatic agents** in *Atropa belladonna* family Solanaceae



**Ancient India** herbs played important role and the describes more than 1000 plants, ex: **Snakeroot** it used for the treatment of high blood pressure (antihypertensive) is composed of many chemical compounds like **Reserpine**.





This century called the century of pharmacognosy because of two Scientist who they contributed to the prosperity of Pharmacognosy

### **Johann Adam**

Published (derMateria Medica) which was a work on medicinal plants and their properties



### **Linnaeus**

(naming and classifying plants)



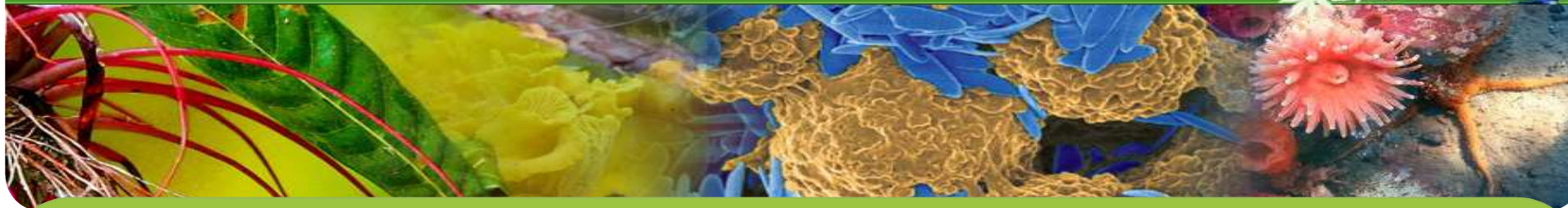
**At the end of the 18th century**, crude drugs were still being used as powders, simple extracts, or tinctures

**The era of pure compounds** (In 1803, a new era in the history of medicine) Isolation of morphine from opium, quinine and caffeine, nicotine atropine, cocaine. In the 19th century, the chemical structures of many of the isolated compounds were determined

**In the 20th century**, the discovery of important drugs from the animal kingdom, particularly hormones and vitamins. Microorganisms have become a very important source of drugs



The American Society of Pharmacognosy



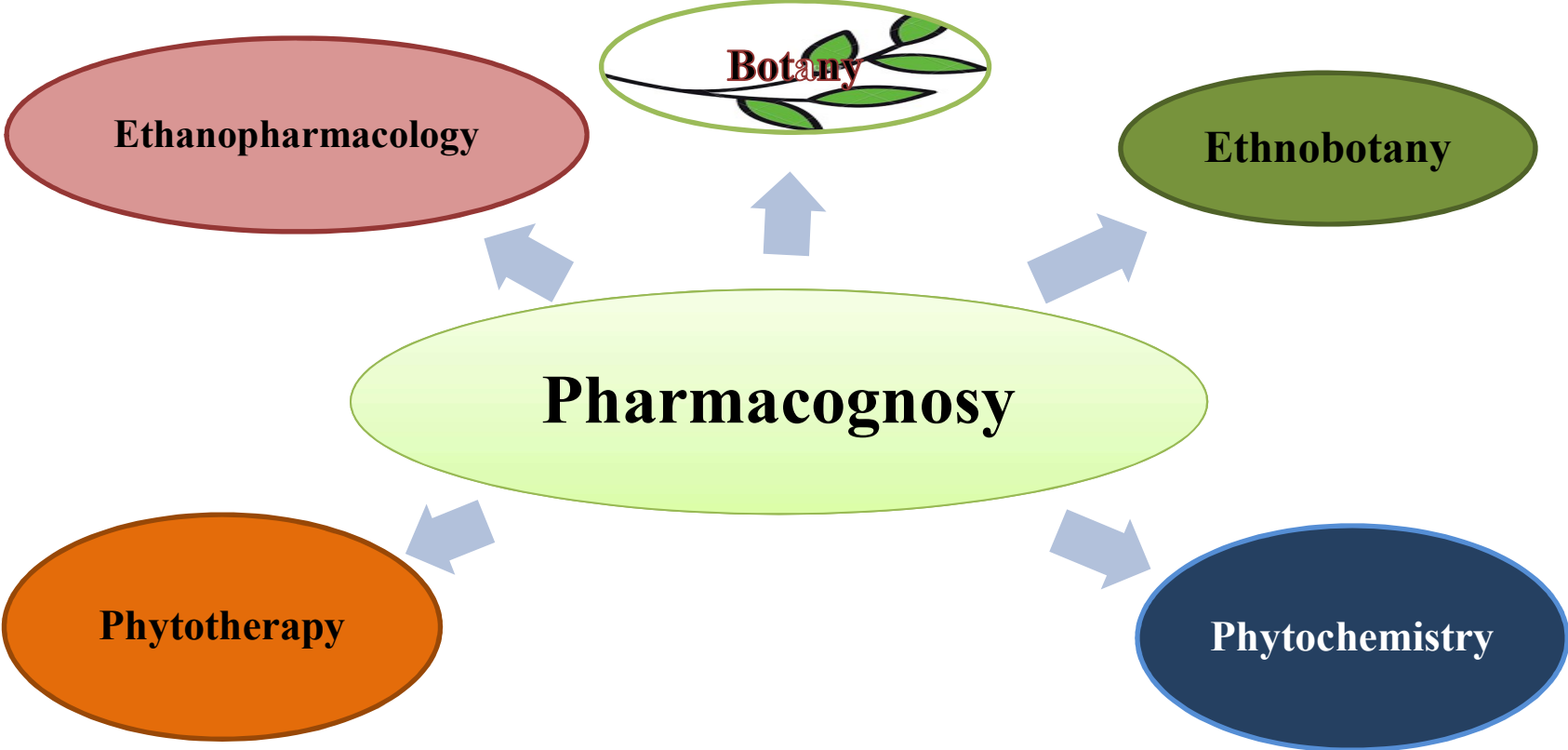
**The American Society of Pharmacognosy defines Pharmacognosy as "the study of the physical, chemical, biochemical and biological properties of drugs, drug substances or potential drugs or drug of natural origin as well as the search for new drugs from natural.**

**ASP** Is a scientific society that promotes the growth and development of pharmacognosy through a presentation of research achievements and publication of meritorious research.





**The branches of Pharmacognosy and its related are:**





## Botany

Includes description, identification, nomenclature, and classification of plants. Allows for correct ID of botanical drugs and subsequent pharmacological phytochemical, analytical, or clinical studies. Mistaken identity can relate in death (Ex. foxglove for comfrey)



**<<<Validity of all biological research hinges on the correct ID>>>**





Is the study of the traditional or folk use for medicinal purposes, so it's the relationship between people and plants. This field includes studying plants as medicines, alternative methods for healing, as wild foods, as agricultural crops.





# Ethanopharmacology

Study the pharmacological qualities of traditional medicinal substances and how it relates to their physical habits and methodology in creating and using medicines.





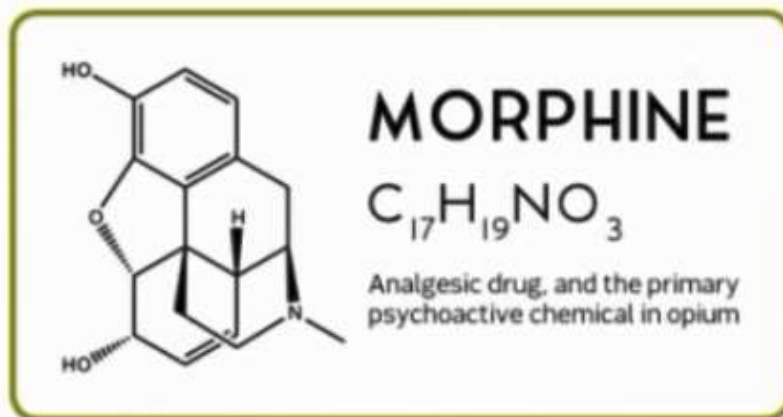
The study of medicinal use of plants or plant extracts for medicinal purposes.

**This means study herbal medicine with details:**

- 👉 How the drugs work?
- 💊 In which time should take it after or before eating?
- 🩺 Is safe gave it to infant or pregnant ?

# Phytochemistry

It's the study of chemicals derived from the plants ( included the identification of new drugs candidates derived from plants sources).





# Source of natural drugs



**Plant kingdom**



**Animal kingdom**



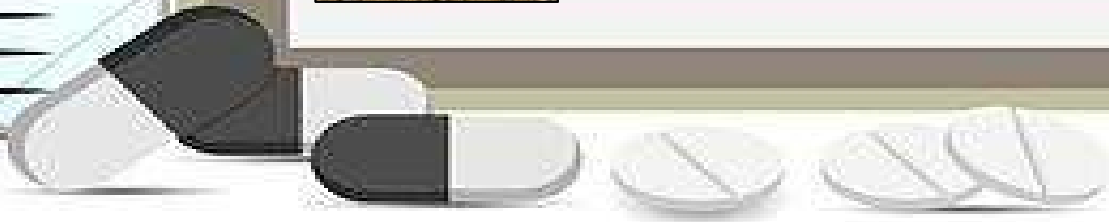
**Microbial world**

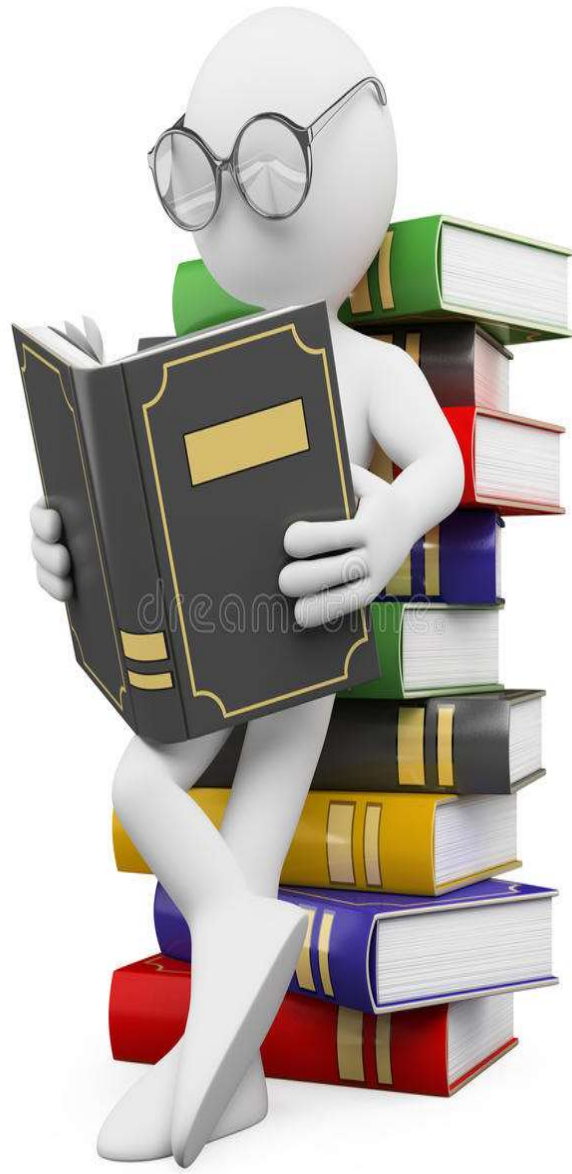


**Marine world**



**Venoms & toxins**

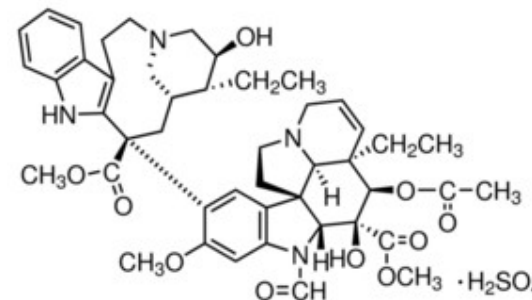




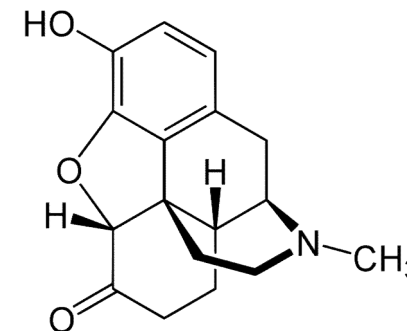
**Roles Played By  
Compounds  
From Natural  
Sources In  
Modern Medicine**

Compounds from natural sources play **four significant roles** in modern medicine:

1) They provide a number of extremely useful drugs that **difficult** if not **impossible** to produce **commercially** by synthetic means (eg. **Vincristine**)

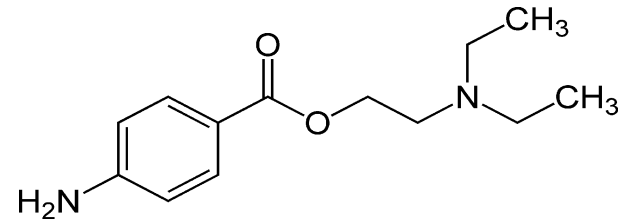


2) Natural sources also supply **basic compounds** that may be **modified** render them **effective** or **less toxic** ( eg. **Hydromorphone** )





3) A third role is their utility as a **prototype** for **synthetic** drugs possessing physiological activation **similar** to the original ( eg. **Procaine** from **cocaine**)



4) Some natural products contain compounds that demonstrate **little or no activity** themselves but which can be **modified** by chemical or biological methods to produce **potent** drugs **not easily** obtained other methods (eg, **taxol**)



## Definition of Terms



**1) Drug:** is a substance of a natural or synthetic origin having medicinal or pharmacological properties.



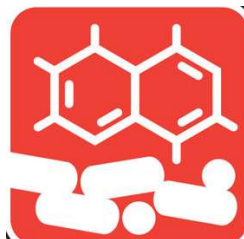
**3) Natural substances:** substances found in nature which consist of the whole plant or plant parts or from animal origin.



**2) Crude drug:** are natural substances of plant or animal origin which has not exposed to any process except collection & drying.



**4) Natural drug:** A general term for any substance which is used in healthcare obtained from natural source.

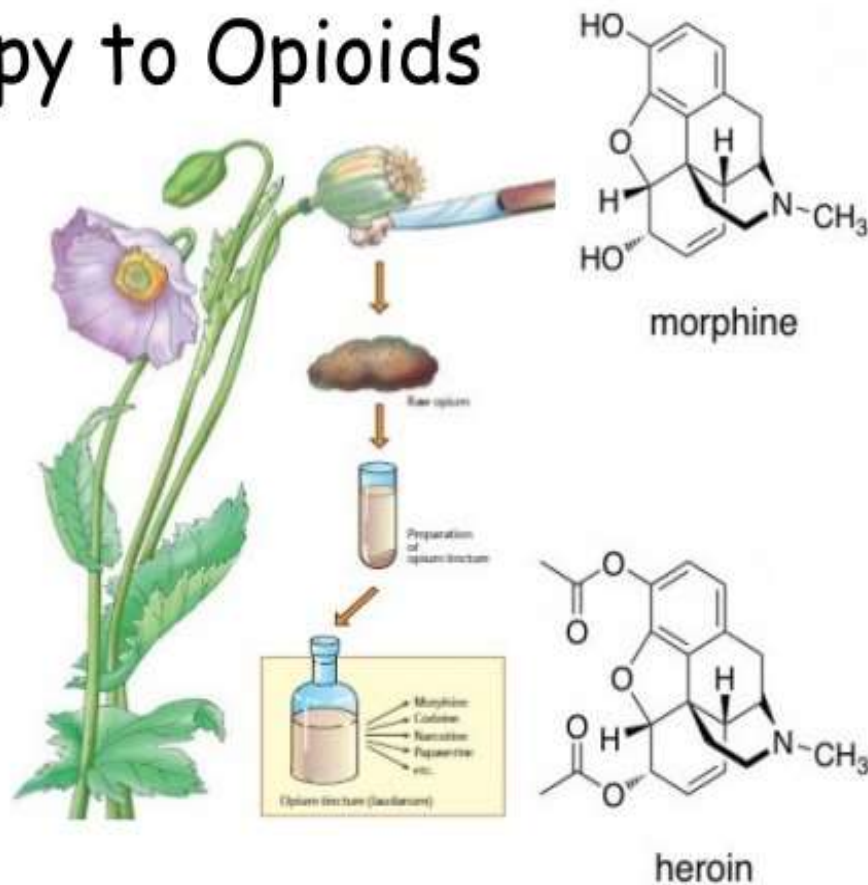


**5) Synthetic drugs:** are compounds that are obtained from chemical synthesis and whose source is the laboratory. Example aspirin, diazepam, indomethacin, propranolol.



**6) Semi-synthetic drugs** are produced by the natural drug and treated it chemically to isolate the active ingredient and then modify it.

## Poppy to Opioids



**7) Indigenous plant:** plants growing in their native countries.

**8) Naturalize plants:** plants growing in foreign land other than their native land.

**9) Cultivated plants:** plants growing under controlled conditions to improve the quality &/ or quantity of the plant production.

**10) Extractions & derivatives:** are the main constituents of the plant prepared by different methods such as (extraction, distillation, sublimation or other means)

# Types of drugs



**There are 3 types of drugs:**

- 📌 **Official drug**
- 📌 **Unofficial drug**
- 📌 **Non official drugs**



**Official drug :** Drugs that have been included in the official pharmacopeia or standard book of medicine are called official drug. for example:

‡ Acacia is an official drug according to BP and USP.

‡ Belladonna leaf is an official drug according to USP.

**Unofficial drug:** Drugs that have been included in previous pharmacopeia but the current issue have omitted are said to unofficial drug.

for example: **Veratrum** used in cardiac pressure. It is cancel from pharmacopeia by drug rule. It will never appear in the pharmacopeia.

**Nonofficial drug:** Drugs that have never been included in the pharmacopeia are called nonofficial drug. This drug may be under research and investigation and may become official in future.

for example: Steroidal alkaloid from *Marsclenia tinctoria* is an example of nonofficial drug.

**Pharmacopeia :** a book published usually under the jurisdiction of the government and containing a list of drugs, their formulas, methods for making medicinal preparations, requirements, and tests for their strength and purity, and other related information.

{{{The pharmacopeias may be U.S.P. , B.P. , and I.P.}}}

# End of Lecture Good Luck!

See you  
in next lecture...



