

## Role of Herbs in Modern medicine system

The Egyptians and Babylonians both introduced the concepts of diagnosis, prognosis, and medical examination. Later surgical practices and improved understanding of anatomy along with developments in technology led to modern medicine. The use of herbs to treat disease is almost universal. Many of the pharmaceuticals currently available to physicians have a long history including opium, aspirin, digitalis and quinine. The use of, and search for, drugs and dietary supplements derived from plants have accelerated in recent years. In fact, according to the World Health Organization, approximately 25% of modern drugs used have been derived from plant. Just over 200 years ago, a 21-year-old pharmacist's apprentice named Friedrich Sertürner isolated the first pharmacologically active compound, morphine, from opium produced by cut seed pods of the poppy plant, Papaver somniferum.

Drug discovery from medicinal plants led to the isolation of early drugs such as cocaine, codeine, digitoxin, and quinine, in addition to morphine, of which some are still in use

Some important herbs in the field of modern Medicine

### Cinchona officinalis:- The Anti Malarial Wonder

The plant is a perennial tree with pink or white flowers. Drug is extracted from reddish brown stem bark. There are over 36 species of Cinchon. The plant has its origin in Peru, Ecuador. It is cultivated in Indonesia & India. The general folk uses of Cinchona are Anti-malarial (quinine); Antipyretic (quinine); Analgesic (quinine); Arrhythmias treatment (quinidine); ulcers (tannins); Stomachic (tannins and Tonic (quinidine). Chemically plant has Alkaloids quinoline group with the medicinal properties a. Quinine: Natural white crystalline alkaloid having antipyretic antimalarial analgesic and anti-inflammatory properties. It was 1st used to treat malaria in ROME in 1631. b. quinidine : Indicated for treatment of arrhythmia . c Cinchonine : Mild Anti Malarial Activity. Quinine is still the main drug against the widespread disease Malaria.

### Papaver somniferum :

The plant is an annual herb originally from Eastern Europe and Western Asia. The opium poppy is the principal source of most naturally occurring opioids. Opium

extract contains many alkaloids with multiple uses. a. Morphine- most addictive and an excellent pain killer. Once used as anesthesia during operations and was important to treat wounds incurred during war. Now used only for extreme pain management, terminally ill cancer patients, chronic pain.

b. Papaverine: –Used for internal spasm, particularly those of intestinal tract. Diarrhea and cramps.

c. Thebaine:- It has stimulatory rather than depressant effects. At high doses, it causes convulsions.

Catharanthus roseus syn. *Vinca rosea* . (Periwinkle).

The plant used in cancer treatment. *Catharanthus roseus* is a perennial evergreen herb in Apocynaceae. Originally native to island of Madagascar. It was traditionally used to treat a wide assortment of diseases .The alkaloids identified in periwinkle has shown anticancer properties.The major alkaloids are two a.

**Vincristine** has been especially effective for treating acute childhood leukemia, often with 99% remission rates b. **Vinblastine** has been especially effective for treating Hodgkin's disease - which had been considered a fatal up to that point Vinblastine, vincristine, and two semi-synthetic derivatives (vindesine and vinorelbine) all have the same mode of action. It inhibit mitosis in metaphase by binding tubulin. Vinblastine and Vincristine are now used as injection for chemotherapy.

Rauvolfia serpentina: ( Indian Snakeroot- Sarp Gandha):

Source of Antihypertensive drug. This is actually the principal application of reserpine, as a treatment for hypertension the pressure exerted on the wall of blood capillaries. The plant roots are generally used in Anti hypertension (Reduces the rate of blood pressure), Sedative, Antipsychotic agent (Effective on mood illness like schizophrenia and mania). Various Indole alkaloids are isolated from the plant

a. Reserpine is the main alkaloid isolated in 1952. Today is a valuable tranquilizer. Its Side effect was a reduction in blood pressure. Today it is used in the treatment of Huntington's disease. Later it was discontinued in some counties due to its harmful side effects.

b. Ajmalicine is used for treatment of circulatory disease.

c. Ajmaline is used in treatment of cardiac arrhythmia. Rauwolfia serpentina has a wide range of positive aspects. It has some harmful effects still accepted as hypertensive and sedative. It is significant because of its historical value.

Salix (Willows):

Salix are deciduous trees and shrubs found primarily on moist soil in cold and temperate regions. These have abundant watery bark sap, which is heavily charged with salicylic acid. Medicinal properties were recognized and pure extract from bark Salicin was isolated. It is the source of Aspirin, First Non-Steroidal Anti Inflammatory Drug. (NSAID). It is used as analgesic to relieve minor aches and pains like headache, post traumatic antipyretic to reduce fever, anti-inflammatory.

Arteether (Artemotil) is a potent antimalarial drug derived from artemisinin, a sesquiterpene lactone isolated from Artemisia annua, a plant used in traditional Chinese medicine

Galantamine is a natural product discovered through an ethnobotanical lead and first isolated from Galanthus sp and approved for the treatment of Alzheimer's disease . Tiotropium (Spiriva ) is an inhaled anticholinergic bronchodilator, a derivative of atropine that has been isolated from Atropa belladonna L. (Solanaceae) and recommended for treatment of chronic obstructive pulmonary disease

Exatecan is an analog of camptothecin from Camptotheca acuminata and developed as an anticancer agent

Galegine, an active antihyperglycemic agent isolated from the plant Galega officinalis provided the template for the synthesis of metformin and opened up interest in the synthesis of other antidiabetic drugs. Papaverine, useful as a smooth muscle relaxant, a drug used to treat hypertension.

Plant derived anti-cancer drugs include Camptothecin from Camptotheca acuminata . Silvestrol from fruits of Aglaia foveolata, Vinblastine and Vincristine from Catharanthus roseus .

Calanolide A, an anti-HIV drug, isolated from Calophyllum lanigerum, a Malaysian rainforest tree.

Actinophyllic acid, an indole alkaloid isolated from the leaves of Australian plant, Alstonia actinophylla (Apocynaceae), it facilitate fibrolysis, removes blood clot and considered as a valuable lead for therapeutic agents to treat cardiovascular disorders.

About 60 % of the drugs that are now available-including household names such as artemisinin, camptothecin, lovastatin, maytansine, paclitaxel, penicillin, reserpine and silibinin-were either directly or indirectly derived from natural products. Subsequently, a large number of well known natural compounds were identified, analysed and synthesized: emetine from strychnine and brucine from *Strychnos nuxvomica* (strychnos), quinine from *Cinchona ledgeriana* (cinchona bark), colchicine from *Colchicum autumnale* (colchicum), caffeine from *Coffea arabica*, nicotine from *Nicotiana tabacum*, atropine from *Atropa belladonna* and cocaine from *Erythroxylum coca*. Many of these compounds are still widely used as drugs.