



The Study of Chemical Constituents and Antimicrobial Activities of Medicinal Plants on Human Being

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Abstract

Development in medicines, their systems, science of plants and human civilizations all over world has gone hand in hand. In recent times, accounts on the medicines or medicinal plants generally focus plant identification, chemistry, pharmacology and their applications. Although the centre of this activity is human being, the history, human civilizations, likes and dislikes of mankind, his compulsions, selections, traditions, medicoloreetc are not attended pertinently or even ignored easily.

Keywords: Constituents, antimicrobial, sarpagandha, tranquillizer, hypertensive andreserpine.

Introduction:

Science of plants and healing diseases were intimately linked from the earliest times. These two sciences were actually inseparable. Most investigators were convinced of exclusive promise of synthetic chemistry for progress in therapeutics.

New drugs discovered range far and wide from muscle relaxants (curares), the antibiotics (moulds, actinomycetes), cortisone precursors from sapogenins (Dioscorea, Strophanthus), hypertensive agents (Veratrum), cytotoxic principles (Podophylum, Vinca and Taxus), etc. *RouvolfiaSerpentina* is known as 'Sarpagandha' in India. It was used against snake-bite in folk medicine and also to deal with insanity. It was adopted, about 150 years ago, in the Ayurvedic and Unani systems of medicine as a sedative to treat insane and maniacal persons. Later on, it was adopted in modern medicine as a tranquillizer and hypertensive drug. Sen and Bose (1931) gave the first scientific information about its efficacy that it not only produces seduction but also act as a hypertensive agent. Later, 'Reserpine' was isolated and characterized in the CIBA laboratories in Basle and marketed under the proprietary name 'Serpasil'. This was very effective than the crude drug and it is still used to treat some forms of blood pressure (cf. Shah, 1995).

Medicinal plants have lost none of their significance even during the age of great development and progress in chemistry. Modern scientific researchers have widened and made more precise our knowledge of the chemical effect and composition of the active constituents which fight against diseases. The second half of the 19th century brought several important discoveries in the newly developing field of chemistry. Today, the herbal medicines are regaining their lost glory in the field of medicine and paying attention to classical as well as ethno medicinal plants.





Development of Herbalism:

Medicinal plants have been decisive for sustenance in health and happiness of mankind since the time immemorial. Burial site in Iraq of about 60,000 years old contained eight medicinal plants. The 'Doctrine of Signatures' was prevalent in medieval Europe.

India, china, Egypt and the Middle East are the ancient civilizations grew from 3000 B.C. on words. The Vedas in India and the Egyptian Ebers Papyrus are the first written accounts on medicinal plants. The former were followed by CharakSamhita from 700 B.C. and it includes 350 herbal medicines. Arabs preserved as well as improved the gains in medicine of the Greek and Roman period especially during AD 500-1500. Islamic culture flourished along Portugal, Italy, Spain and North Africa, led to foundations of medical schools.

European scholars absorbed Arabic medical learning during AD 1000-1400. It was permitted for all Christian, Moslem and Jewish men and woman to study medicine. Rapid colonization was followed after arrival of Columbus (1492) in central and South America by Spanish and Portuguese. Many unread medicinal plants were brought to the old World from America.

Later, it was Paracelus (1492-1541), European 'Father of Chemistry' refuted 'Galen's theory' in medicine. Scientists in the early 19th century isolated chemical constituents from plants or synthesized in the laboratories. They studied how isolated chemical affect the human body and also how the body works in disease and health. This trend of research continued in 20th century and led to the reinvestigation of penicillin (antibiotic) by Alexander Fleming (1881-1955) against the diseases like Malaria and Tuberculosis etc. In US, UK and Britain, during 1941 to 1968 it was illegal to practice herbal medicine without medical qualifications.

Chemical constituents and antimicrobial activities:

Here in this paper have been presented photographs along with their family, common names, useful parts, chemical constituents and advantages of some of the medicinal plants.

1. *Alchemilla vulgaris* Rosaceae Ladies Mantle

Useful parts = Roots and aerial parts (Figure. 1).

Chemical Constituents = Tannins, glycoside and salicylic acid.

Antimicrobial Activity = It has been popular wound healer, particularly for reducing heavy menstruation, relieving menstrual cramps and to improve menstrual cycle. It is helpful to treat fibroids and endometriosis. It has been in vogue to facilitate childbirth. It is useful for diarrhoea and gastroenteritis.

2. *Carduus marianus* Asteraceae Milk Thistle

Useful parts = Flower heads and seeds (2).

Chemical Constituents = Flavolignans

like silymarine; polyacetylenes and bitter principles.





Antimicrobial Activity = It is protective for the liver and helps to stimulate bile secretion. It also increases breast-milk production and acts as antidepressant. In Western herbal medicine, it is principally used to protect liver. It is used in hepatitis and jaundice.

3. *Cinchona calisaya* Rubiaceae Cinchona

Useful parts = Bark of trunk (Figure. 3)

Chemical Constituents = Alkaloids like quinine and quinidine, inole alkaloids like cinchonamine, bitter triterpenic glycosides, tannins and quinic acids.

Antimicrobial Activity = It is bitter, antimalarial, antispasmodic, antibacterial, astringent and tonic. It stimulates appetite and helps reduce fever. It also helps to improve digestive function. It cures infected throats, sores, night cramps and arthritis. In India, it is used against sciatica, dysentery and 'Kapha'.

4. *Elaeocarpus sphaericus* Tiliaceae Rudraksha

Useful parts = Stem bark, leaves, roots and fruit stone (Figure. 4).

Chemical Constituents = Elaeocarpidine, dielaecarpidine, quercetin, gallic and ellagic acids, rudrakine and other seven alkaloids.

Antimicrobial Activity = Fruit stones are used in epileptic fits, cough, neuralgia, bronchitis, cephalgia, anorexia and manic conditions. They are cooling, emollient, liver tonic, expectorant and cerebral sedative. Roots are useful for haemorrhoids. Roots and leaves both are beneficial in diarrhoea, intermittent fever, bronchitis and dysuria.

5. *Leonurus cardiaca* Lamiaceae Motherwort

Useful parts = Aerial parts (Figure. 5)

Chemical constituents = Iridoid (leonurine), flavonoids, diterpenes, alkaloid (L-stachydrine), tannin and caffeic acid.

Antimicrobial Activity = It strengthens weak heart functions and benefits nerves as well. It is sedative, antispasmodic and promotes relaxation. It stimulates the muscles of uterus. It is especially beneficial for period pain, delayed periods and premenstrual tension.

6. *Terminalia bellirica* Combretaceae Bibhitaka

Useful parts = Fruits, bark and gum (Figure. 6).

Chemical Constituents = Fruits contain ellagic acid, bellericanin, B-sitosterol, ethyl gallate, galloyl glucose, chebulagic acid, mannitol and other sugars.

Antimicrobial Activity = The fruits are astringent, bitter, tonic, laxative, antipyretic and antidiarrhoeal. They are useful to cure hoarseness, dyspepsia and piles. The bark is purgative and diuretic. The gum is also purgative and demulcent.

7. *Zanthoxylum americanum* Rutaceae Toothache Tree

Useful parts = Bark and berries (Figure. 7)





Chemical Constituents = Alkaloids like chelerythrine, herclavin, lignans (asarinin), resins, tannins, volatile oil and neoherculin.

Antimicrobial Activity = It is antirheumatic, carminative, increases sweating and stimulates blood circulation when the arteries of limbs are narrowed. It benefits for flatulence, wind, and diarrhea and tones digestion. In western countries, it is an important remedy for arthritic and rheumatic ailments



Figure. 1



Figure. 2



Figure. 3

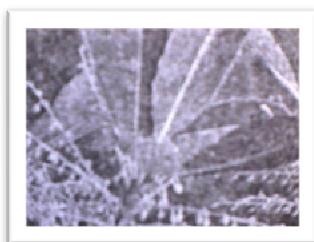


Figure. 4



Figure. 5



Figure. 6



Figure. 7

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