"BIOLOGICAL STUDIES OF PHYLLANTHUS NIRRUI AND ALLIED SPECIES."

INTRODUCTION:

Herbal medicines are less appreciated than used. Many of our present medicines are derived directly or indirectly from plants. Some of them are used as power, decoction or extract etc and phytochemicals of some are used as starters of therapeutically active molecules. In the recent days, medicinal plants or herbs are used singly or in formulation in the name of food additives or bioseuticals and thus they have gained therapeutic status indirectly in the medical world. Many drugs derived from plants have entered in the western drug market and have found place in the pharmacopoeias of world outside India. Clinical plant based researches have proved their efficacy for many diseases for which synthetic drug are not available or less active. Medicinal plant drugs based on ethanopharmacological knowledge with long historical efficacy, these medicines are centre of criticism by pharmaceutical
world from producers to doctors and even end users. This is because of their erratic efficacy. Similar plant drugs produced by similar methods do not work all the times. Recently investigated by CDRI, a drug known as Megamind which was produced from *Bacopa moniera* (Linn) family Scrophulariaceae is considered as a crown medicine from the research work of CDRI. It was based on the modern experimentation covering phytochemical and pharmacological criteria, used rigorously during investigation after some years of use, this drug was withdrawn by the drug controller of India as it was not working with certainty as it was claimed.

So, also in the case of several other medicinal plants like *Phyllanthus niruri* of family Euphorbiaceae which is used for hepatitis-B, efficacy of plant drug is not regular. The cause for this type of behaviour must be ascertained. This may be due to erroneous identification of the species, may be difference in the time of collection when the active phytochemicals are less in concentration.

It may be due to the fact that several sub species or morphological clones are present. However, most important is the presence of phytochemical clones in a species. Moreover one species or clones in a specific, ecological condition or method of cultivation at same place also indicate variation in phytochemicals quantitatively, hence in efficacy. So it is evident that when we use a plant for medicinal purpose then it should contain optimum quantity of desired chemicals.

A detailed study in varities and clones is desirable before we can recommend a plant clone for medicinal use. Method of cultivation or collection also need investigation because plant vary in quantity and
quality of chemicals in different seasons, area and agricultural practices. *Phyllanthus niruri* family-Euphorbiaceae also have erratic variation in efficacy this is why the study on *Phyllanthus niruri* and other herbaceous species of this genus for comparison have been planned.

Despite huge amount of work done on this plant and claims made, there are reports of variable activities. Recent use of *Phyllanthus niruri* is on hepatitis B, and its use as hepatoprotective drug is well claimed.

There has been a common observation that some time it works excellently and some time do not work well. Phytochemical investigations so far made by us indicate that there are erratic chemical variations in different drug samples.

The man since antiquity had to depend on nature and plants for sustenance and survival. Man as savage must have known by experience how to relieve his sufferings by the use of plants growing around him. The ancient civilization records show that a number of drugs used today were already in use in ancient times. The history of medicinal plants dates back to Vedic period about 4500-1600 B.C. After that, the Egyptians, Babylonians, Greeks, Romans, Chinese and Indians developed their characteristic materia medica respectively. Thus, modern medicine is supposed to be derived from Greek medicine which was taken over by Romans and Arabs from whom after its enrichment with Chinese and Indian medicine, was taken over by Europeans.

The history of Greek medicine and pharmacy begins from Hippocrates (borne in 460 B.C.), father of medicine, who in his writings named nearly 400 'simples' as medicinal substances. Theophrastus (370-
287 B.C.) in his work 'On the history of plants' mentioned about 500 drugs. The Dioscorides, who flourished about 60 A.D., is said to have become a surgeon in Nero's army so that he would be able to study the flora and fauna of different countries. In his life, he travelled Italy, Greece, Asia minor, Spain and France and collected a great number of botanical specimens. Whenever circumstances permitted, he questioned the natives about the medicinal virtues and uses of the specimen he gathered. His work on materia medica was published in 1499 which contains a lot of information on various drugs. Important among these are: Acacia, aconite, brine, aloes, oil, starch, dill, anise, bitter almond, juniper, rose oil, root, licorice, wine, cardamom, cumin and alcoholic extract of root of mandrake and poppy as a soporific in surgery. Later, this book was translated into Arabic and some European languages (Kanshik and Dhiman, 2000).

Pliny, the elder (C.A.D. 23-79) in his work 'Natural History' described medicines derived from plants. Galen born in 130 A.D., is said to have kept pharmacy for a time in Rome and he derived so many preparations of vegetable drugs which were called, 'galenicals'. He advised his readers "In order to know drugs, inspect them not once or twice but frequently, for though twins look alike to strangers, they are easily distinguished by friends". His works were also translated into Arabic languages. After the decline of Galen medicine in Rome, the work of earlier Greeks physician were forsaken and work of Galen gradually assumed the position of greatest authority in medicine. Greek medicine found its votaries among Arabs who caused as much literature as could be found to be translated into Arabic.(Kaushik and Dhiman, 2000)
The history of medicine in India can be traced to the remote past in the Vedic period. The Rig Veda, perhaps the oldest repositories of human knowledge having been written about 4500-1600 B.C., claims about 99 medicinal plants. Yajur Veda listed 82 plants and in Sam Veda, various plants already mentioned in Rig Veda and in particular, Some plant has been described. Atharva Veda, which is considered important among all four Vedas, deals with 288 plants, almost all have medicinal ingredients and were used to cure deadly diseases. The later production from Vedas, deals with 288 plants, almost all have medicinal ingredients and were used to cure deadly diseases. The later production from Vedas, the Brahmans deal with 129 plants and Kalpa sutras describe some about 519 plants. Those plants which have not been dealt with in detail in the earlier work like the Rig Veda, Atharva Veda and Brahmans have been vividly described in later Sanskrit texts like Kalpa sutras. (Kaushik and Dhiman, 2000)

Ayurveda, the science of life is considered Upveda (about 2500 B.C.) contains a more detailed account of many drugs and their uses. Ayurveda in fact, is the foundation stone of the ancient medical science of life and art of healing. The eight divisions of Ayurveda were followed by the comprehensive works of Chraka (1000 B.C.) and of Sushruta (800 B.C.), which gave a detailed description of the material medica as it was known to ancients. Charak samhita, the first recorded treatise on Ayurveda is the edited version of the old scientific treatise by Agnivesha who wrote the edited version of the old scientific treatise by Agnivesha who wrote the first treatise on Ayurvedic medicine based on teaching of Atria the great sage (Kaushik and Dhiman, 2000).
Egyptian material medica is believed to be written about 1500 B.C. which contains a collection of preparations and formulae covering a wide range of uses. The important drugs mentioned in it includes oil, wine, beer, yeast, vinegar, turpentine, figs, castor oil, myrrh, mastic, frankincense, worm wood, aloes, opium, cumin, peppermint, anise, fennel, saffron, lotus, linseed, juniper fruits, henbane, mandragora, poppy, gentian, colchicum, squall, cedar, elder berries, honey, grapes, onion, garlic, acacia and date blossoms. (Kaushik and Dhiman, 2000).

It is interesting to mention that during ayurvedic period, the chemistry of natural products isolated both from flora and fauna was well understood at least for practical purposes. Nagarjuna is considered as a learned person is Hindoo chemistry, was the inventor of Kajli (a compound of sulphur and mercury) and art o calcinations (Bhasma). He was not only a renowned Vaidya but was an authority on astronomy, chemistry and magic as well. Nagarjuna was born in a poor Brhamin family and he wrote 'Rasa ratnakara, Arogyomanjari and Kakshaputa. Bhoja prahandha, a treatise written about 980 A.D. contains a reference to inhalation of medicaments before surgical operations and an anesthetic called, 'sammohini'. is said to have been used in the time of Buddha. (Kaushik and Dhiman, 2000).

\( \text{Phyllanthus niruri} \) locally known as Bhuai amla. Bhuai amla has a long history in herbal medicine system in every tropical country where it grows. For the most part, it is employed for similar condition world wide. Its main uses are for many types of binary and urinary condition including kidney and gall bladder stones, its uses for hepatitis, cold, flu, tuberculosis and other viral infections liver diseases and disorder
including anemia, jaundice and liver cancer and bacterial infections such as cystitis venereal diseases and urinary treat infections.

Bhuai amla in herbal medicine system where it grows. Its main uses are:

1. To expel kidney stone and gall stone used as antilithic.
2. To tone, balance, detoxify and protect the liver, and to balance liver enzymes used as anti-hepatic-toxic.
3. For viruses, including Hepatitis A, B and C, herpes and HIV viruses used as antiviral.
4. To tone, balance, strength, detoxify and protect the kidney and to reduce uric acid and increase urination.
5. To relieve hypertension and decreasing high cholesterol levels.