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"Uses of Secondary Metabolites from Weeds (Plants): Southern Haryana"

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INTRODUCTION

Weeds (Plants) are important source of medicines. These are used by the human beings for treatment of many diseases from ancient times. There are so many references are present about natural vegetation, those are used as medicines in 'Rig-Veda', which is the India's most ancient Religious Grantham.

The Indian traditional clinical method 'Ayurveda' is based on Chark-Sanhitga and Sustra-Sanhita that is include description of about 700 medical plants. Medicinal importance of any plants depends on some specific substances found from the plants such as alkaloid, steroids, resins, glycosides, volatile oils, gums, tannins etc.

The traditional medicinal plants throughout the world played an important role in development of new herbal drugs. In India, utility of medicinal plant wealth can be traced since very ancient times. India is known for some of the important medicinal plants, which are in the great demand all over the world. In India, about 540 plant species are utilized by the pharmaceutical formulatons (Kapoor and Mitra, 1979). Among these 100 plant species are in much demand by the pharmaceuticals.

Shrubs found in the district Mahendergarh are pala, puthkanda, bansa, panwar, karia, khip, aak, phog and nagphani. Amarbel is a common parasite climber. One of the most characteristic shrubs is pala, a prickly shrub, which covers the fields thickly during September and October. It is very useful shrub; its leaves are used as fodder; its roots for dyeing leather.

Medicinal plants (weeds) found in the district are ashwagandha**,** giloi, kharnthi, bhakra, dhatura etc. However, their collection becomes lavish as these are found in scattered form.

The important grasses found are anjan, dhaman, dub, kana, dabh palwa and chiraya. The patatable grasses like anjan, dhaman and dub have dwindled due to excessive grazing. In village

neem, bakain, khairi, mesquite or pahari kikkar, henna and eucalyptus have been planted to increase the forest wealth.'

Semi-arid ecosystem of District Mahendergarh exhibits peculiar edaphic and climatic conditions. The region is arich repository of genetic material of important arid medicinal plant wealth. These plants are not only valued as herbal drugs but also utilized for food, fodder, gums and resins, essential oil, dyes etc.

It is well known that most of the medicinal plants of arid region belong to families such as Apiaceae, Asteraceae, Cactaceae, Chenodiacae, Solanaceae, and Zygophyllaceae etc. in this area some of the plant species are quite restricted in distribution. Most of the medicinal plants of this region are collected from the wild population.

Secondary Metabolites:

In addition to primary metabolites (amino acides, sugars) common to all life forms, some reactions lead to the formation of compounds unique to a few species. These products so produced arte called secondary metabolites (Luckiner and Nover, 1977).

Secondary metabolites are those substances whose structure and metablic interactions within the cell are apparently different from thoser involved with the primary growth metabolism. These substances may be: Alkaloids, Antibiotics, Cardiac glycosides, Coumarone, Lignins, Resins, Sterol and Sapogenins, Tannins, Volatile oil, Insecticides etc.

Secondary products are produced from primary products and play an important role in different metabolic activities of living organisms.

Production of Secondary Metabolites:

Higher plants produce a great variety of secondary products, which play a minor role the basic life processes of the plant but often have an ecological role, such as attractant of pollinators and chemical defense against microorganisms, insects and higher predators. Many of these natural products have been used as sources of large number of industrial products, including agricultural chemicals, pharmaceuticals and food additives.

Many of the substances used in the pharmaceuticals originate from plants. Some of the plants are rich in secondary metabolites which are potential source of a drugs and essential oils.

Biosynthesis of metabolites although controlled genetically is affected strongly by environmental influence.

UNESCO (1960) has published a survey report with detail of the old world medicinal plants growing in different arid zones belongings to different families which are most adapted to dry conditions for their growth and production of secondary metabolites in plants under water supply.

The flavonoids are polyphenolic compounds possessing 15 carbon atoms; two benzene rings joined by a linear three-carbon chain. The skeleton above can be represented as the $C_6 – C_3 – C_6$ system.

They occur universally in higher plants but are uncommon in cryptogams. They impart colour to flowers and fruits. Correlation between flower colour and attraction of insects for pollination is well known. However, their occurrence is not restricted to flowers but include all parts of the plant. Some of the flavonoids are of pathological significance whereas others physiologically important to animals. These are used for their therapeutic properties, treating haemorrhagic condition and protection against nuclear hazards.

Steroids are the most important group of secondary metabolites. Steroid represents the non-saponifiable fraction of the lipid extracted in the fat solvents, which bear cyclopentano-perohydro-phenathrene nucleus in their molecular structure. The steroid nucleus consist of four rings, A, B, C, D, A, B and C rings are six-member whereas D is five-member.

If the compound has one or more hydroxyl groups and no carboxyl groups, it is a *sterol*. If it has one or more carbonyl group or carboxyl groups then it is *steroid*.

Steroids occur abundantly in the vegetable world than in the animal and thus plant steroids have been employed as starting materials for hormones syntesis. The sapogenin, diosgenin, which is abundantly available, is of particular importance for the production of sex harmones.

The phytosterol are ubiquitous in higher plants and probably also in plant tissue culture. Indeed, it is probable that they are essential components of many cellular membranes.

The steroids attached with sugars are very common in plants. One class of these substances is known as saponins. The steroidal part of these saponins called sapogenin.

Sapogenins are widely used in field of medicines, as they are the main precursors of many medicinally useful steroidal hormones.

Medicinal Uses:

- Dry and crushed flowers taken orally with water cures whooping cough.
- Latex is applied for treatment of syphilis, rheumatic pains and cutaneous affections.
- Those suffering from pyorrhea use the paste of seeds taken with salt and mustard oil as toothpaste.
- Seed oil is used with foot powder massage in chronic skin diseases.
- Tribals burn seed oil to collect carbon from the smoke, which is applied against conjunctives.
- Fresh leaves or juice is applied in conjunctives; on ulcer for quick healing and against scorpion stings.
- Leaves are rubbed on sites of irritation to cure scabies.
- Yellow juice of stem is used twice a day for one week for healing of wounds.
- Seeds possess an emetic quality. In stomach complaints the usual does of oil is thirty drops on lumps of sugar and its effect is perfectly magical, relieving the pain instantaneously, throwing the patient into refreshing sleep.

Economic uses:

- Food: Fruits are pickled locally and commercially. They are cooked with the fruits of Prosopis cinerareia (Sangri) and seeds of Acacia Senegal (Kumat).
- The children suck the flower for nectar.
- Timber: The wood is locally used for making roof of huts and for household article like spoons and stirrers.
- The wood is not attacked by white ants, so used for agricultural implements like plough and yoke.
- Weather indicator: People believe that profuse flowering in Capparis deciduas is a signal of reverse famine.

- The tender leaves and branches are used as plaster for the boils; when chewed relieves toothache.
- The fruits are astringent and useful in cardiac troubles and biliousness.
- The roots-bark is acrid, laxative, diaphoretic, alexitric and anthelmintic, it is also useful in cough and the root bark is taken with hot water to cure cough and asthma.
- The sand around the root is removed, heated, mixed with butter-milk and applied on the body to cure body ache, dropsy, swelling etc.

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