

Rationality of Vriksha Ayurved in plant diseases

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Abstract-

In India farming and cultivation of plants is not a legacy of modern science. Indian Ancient Ashrama traditions carving out of wild and natural forests with preservation of plants of medicinal values. It denotes rising of plant sciences. Vriksha-ayurved is of great relevance in Ayurveda and Agriculture. Vriksha-ayurved gives us a abundant knowledge in various areas of cultivation such as treatment of seeds, soil testing and preparation of land. It gives land classification so as methods for more yield and cultivation practices for plants etc. Vriksha-ayurved also including the topics like the causes of plant diseases and treatment.

Now days the vast amount are being spent every year on pesticides to control pests.Yet pesticides are also proving to be environmentally disastrous. The Vriksha-ayurved would provide us with knowledge on pest management based on sound ecological priniples.

Keywords:- Vriksha-ayurved, Traditional cultivation

Introduction -

A renaissance of interest in *Ayurveda* has result from the health seekers towards natural origin medicine and holistic approach. In India more than 80% of population utilizes different plant species as traditional medicine that described under alternative medicine (AYUSH).For the medicine and nourishment purpose, healthy herbs are important. *Ayurveda* has given empathizes on state of herbs used in many formulations.

Nowadays after successful Green revolution quantity of herbs/crops increased but they have least therapeutical values. Hence, Hybrid variety of plant is not efficient when it is used for therapeutical purpose.

Vrikshayurved is a great relevance in Ayurveda, Agriculture, Horticulture and life sciences. It provides a wealth of knowledge on a variety of areas such as seed treatment, soil testing and preparation, methods for yield increases, land classification, details of cultivation of plants etc. Various other topics like the causes of diseases, their identification and treatment, exploration of water and minerals with help of plants are also discussed. Many techniques and formulations are described under *vrikshayurveda*. Acharya's knows about the plant diseases along with human diseases. They had compiled the knowledge as *vrikshayurveda*.

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Ayurvedic treatises cover about 2000 species of plants with their medicinal uses. One of the unique features of ancient Indian classical medicine system is proper documentation like *Veda, Samhita,Nighantu,Tika*,etc.In *Atharveda* (3000BC-1000BC) 289 plants were described. (1)

PERIOD	Approximate no.of plants	Literature
3000 BC-1000BC	289	Atharveda
1500BC-500AD	650	Charak Samhita,Sushruta Samhita,Ashtang Sang <mark>rah</mark> a
500AD-1900AD	2000	16 major Nighantu (i.e:- Bhavprakash nighantu,Raj Nighantu,etc)

The cardinal aspect for the development of Indian Medicinal system is quality assurance and the biggest challenge being availability of raw plant material gratifying specific protocols enumerated in classical literatures with fulfilling modern day scientific benchmarks.

Here, Vriksha-ayurved gives us a hope to pleasing the protocol of classics so as modern scientific benchmarks. Vriksha-ayurved suggested that tree planting is one of the means to attain the four broad aim of life i.e Dharma ,Artha,Karma and Moksha which indicated the importance of trees in holistic development of mankind and use of crop production for sustainable agriculture.

Vriksha-ayurved also having vast knowledge of plant diseases, their causes, identification and treatment, exploration of water and minerals with the help of plants are also discussed.

• Plants diseases:-In vrikshayurveda,All plant diseases are broadly classified considering *Aabhyantar one bhaya*. Considering the vatadi dosha i.e. vaat, pita, kapha as abhyantar. They have enlisted bhaya diseases.

Two types of plants disease are described in Vriksha-Ayurveda.⁽²⁾

- Internal diseases (*Aabhyantar*) < 049-000
 -These occur due to imbalance of *Doshas* i.e *Vaat*,*Pitta*,*Kapha* and further divided into three types.
- Vataj- Disease occur due to dry land and the symptoms are thin, weak zigzag stem, hard fruits, tumors, etc.
- *Pittaj* Disease occur when tree watered with acidic and salty water. Yellowish leaves unhealthy flowering and fruiting are the symptoms of it.
- *Kaphaj* Disease occur when tree watered with sweet and cold water normally in the winter and spring season.Late flowering and fruiting,small pale leaves etc.are the symptoms of it.

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• External diseases-(Bhaya)

-These occur due to worms, insects and unfavorable enviornment, weakness of affected part, dry and broken leaves etc. are the symptoms of it

- Treatment of plant diseases (3)
- Treatment of Internal diseases
- *Vataj:- Kunap*(liquid manure prepare from parts of carcasses)on tree suffering from imbalance of *Vaata* fumigation(smoking)by burning animal fat,ghee,hemp and cow's horn also used treat *vata* disorders.
- *Pittaj Pittaj* disease should be treated with cool and sweet substances. When watered by the decoction of milk,honey,yashtimadhu and madhuka, trees suffering from *Pitta* type of diseases get cured.Watered with decoction of fruits,*Triphala,Ghee* and honey,the trees are freed of all *Pitta* type of diseases.
- *Kaphaj*-The diseases of the *Kapha* type can be overcome with bitter, strong and astrigent decoctions. The paste of white mustard should be deposited at the root and the trees should be watered with a mixture of sesame and ashes to treat *Kaphaj* disorder. Earth around the roots of the trees should be removed and fresh, dry earth should be replaced for curing *Kapha* diseases.
- Treatment of External diseases
- To remove insects both from the root and branches of the trees, should water the tree with cold water for seven days.
- The worm can be overcome by the paste of milk, *Kunap* water and cow dung mixed with the mixture of white mustard, vasa and aativisha.
- The worms accumulated on trees can be treated quickly by smoking the trees with the mixture of mustard,vidanga
- Vasa and water mixed with beef, horn of a buffalo, flesh of pigeon and the powder of Bhallataka.
- To destroy the worm, insect etc. anointing with vidanga mixed with ghee, watering for seven days with salt water and applying ointment made out of beef, mustard and sesame.
- The insect on the leaves can be destroyed by sprinkling the powder of ashes and brick dust.
- Use of foliar and brick dust.
- Use of foliar and soil application of oil to trees to protect from frost and termites.
- Tree suffering from damage due to frost or scorching heat should be externally covered, sprinkling with *Kunap* water and milk is also advisable.
- The broken trees should be smeared with the paste of bark of plaksha and Audumbara mixed with ghee,ghee,honey and the broken part should be firmly tied with the rope of rice stalk,fresh soil should then be filled in the basin around the tree.

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Kunap water (4) – Kunap preparation involves boiling flesh, fat and marrow of animals such as deer, pig etc. In winter, placing it in the earthen pot and adding milk, powder of sesame oil cake, decoction of pulses, ghee and hot water. Now the pot put in a warm place for two weeks the resulted fermented liquid manure is known as *Kunap* water. Other nutritive substances - Fat , ash,brick powder,cow horn, lotus mud marrow ,goat , buffalo and cow dung ,milk ,honey etc.

Since *Kunapajala* is a liquid fermented from animal wastes that contain animal flesh,bones,bones marrow, dung, urine and skin the fermented product contain basic constituents such as fatty acids, keratins,amino acids, sugars, macro- and (almost all) micronutrients in available form, such plants will respond compartively better than plants nourised with natural water in terms of growth, flowring and fruiting.

- Mustards- When black mustard (*Brassica nigra*) seeds are broken, the enzyme Myrosinase is released and acts on a glucosinolate known as sinigrin to give allyl isothiocyanate. Likewise the white mustard [*Brassica* (*Synapsis*) alba] seeds yield sinalbin. Both species possess the property of insect antixenosis [a resistance mechanism employed (usually by a plant) to deter or prevent pest colonization; intended to parallel antibiosis] and are acaricidal, insecticidal, antifungal, and nematicidal.
- Honey-Honey is antimicrobial, used for treating wounds in plants and animals; contains proline, which induces systemic resistance in plants, increases contents of cytokinins and auxins, and protects against stresses salt, drought, etc. Proline-rich peptides are antimicrobial; honeybee apidaecin is a unique antibacterial peptide derivative found in immune honeybee lymph.
- Milk- Milk is a sticker (on leaves) and growth promoter. Animal milk contains a number of proteins such as glycolactin, angiogenin-1, lactogenin, lactoferrin, lactoperoxidase, alpha-lactalbumin, lactoglobulin, and casein. Milk proteins contain amino acids such as proline, which, as stated before, is known to induce general disease resistance in plants. Lactoferrin present in bovine milk has antibacterial, antiviral antifungal and anti-nematode properties.
- Neem- Neem contains a number of antimicrobial chemicals. The bitter taste of neem
 is due to the presence of an array of complex compounds called limnoids or
 limonoids (triterpenoids). Seeds are the main source of active ingredients of neem.
 So far, nine limnoids have been isolated and identified in neem seeds, viz., salanin,
 salannol, salannol acetate, diacetyl salanin, 14-epoxy azaradion, gedunin, nimbine,
 D-acetyl nimbenin, and azadirachtin. Of these, azadirachtin is the most active
 compound. The neem derivatives do not kill but modify the biological processes of
 harmful insects in a detrimental way. The actions include antifeedant effect, larval
 repellent, oviposition deterrent, growth and metamorphosis inhibiting effects, effect
 on fecundity and egg sterility, attractants, etc. Neem bark has also antibacterial and
 anti- insect properties.

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- Vidanga Vrikshayurvedas have recommended fruits of vidanga/bidanga (*Embelia ribes*) as an anthelmintic material. Embelin (2, 5-dihydroxy-3-undecyl-p-benzoquinone) is found to be the active principle of *Embelia ribes* and reported to possess a wide spectrum of biological activities including antibacterial and insecticidal properties.
- Hair, nails, and horns- These contain keratin, which have large amounts of the sulfurcontaining amino acid cysteine, required for the disulfide bridges that confer additional strength and rigidity by permanent, thermally-stable cross linking. When burnt, keratin emits sulfurous smell as it consists of sulfur in high amount. Smoke from nails, etc. releases sulfur that controls diseases and pests.
- Panchgavya (5):- In general, management of soil borne diseases is very difficult particularly, Fusarvium pathogen which is a soil in habitant and remains viable for 50years in the soil. Hence, it is difficult to manage this pathogen by any methods including cultural methods.

The cow milk, curd, ghee, Cow dung and cow urine have been individually used as plant protection protocols as prescribed in ancient. Vrikshayurveda texts (concerning health of plants/trees). It is know that cow ghee and curd are toxic to certain living entitles and in addition curd is acidic. The Panchagavya five products of cow (milk, curd, ghee, dung and urine) is supposed to be consumed in a little quantity by persons who need to get purified before performing certain Pooja.

The innovative research on use of modified Panchagavya mixture (MPG-3) was carried out on two soil borne disease like Fusarium wilt of tomato and Panama disease of banana. The traditional Panchagavya was modified by adding yeast and common salt and three formulations were tested.

There was reduction in Fusarium population in MPG-3 treated pots. Soil application of MPG-3 provided encouraging results compared with seedling dip. The population of Fusarium wilt declined significantly to 11.8x 104 du/9 after 150days of planting. These results indicate the promise shown by MPG-3 in the ecofriendly and cost effective management of Fusarium wilt.

Discussion:-

Knowledge of *Ayurveda* had developed very well and medicinal powders, decoctions (fresh or fermented), fumigations, pastes, etc. were made from locally available materials. The raw materials used were cattle products, herbals, and natural products such as honey. Since scholars treated plant life and human (animal) life as similar, application of *Ayurvedic* principles and prescriptions to plants slowly developed into a distinct discipline, *Vrikshayurveda*.

Vrikshayured i.e. the indian science of plants have great importance in traditional methods of agriculture, pest control and crop management. It has long theoretical and practical history in India . There are large numbers of manuscripts.

Acharayas were familiar with hidden active principle in plants e.g. Keratin, MPG-3.The Panchagavya isused on two soil borne disease like Fusarium wilt of tatmato and Panama disease of banana by modifying it.

Conclusion:-

The vast knowledge provided by *Vrikshayurveda* is very effective and convenient to use. Still in modern agriculture's era *Vrikshayurveda* has its own importance.

- The knowledge of Vrikshayurveda can be effective in terms of various plants and diseases.
- The *dravyas* (drugs) used in plant diseases are natural and easily available.
- The usages of various techniques and formulation can prove rational for the treating the plant diseases.
- With the field trials of the techniques mentioned in *vrikshayurved* can be studied thoroughly in the treatment of plant diseases.

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