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IMPORTANT ANTICANCER HERBAL PLANTS OF WESTERN RAJASTHAN

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ABSTRACT:

The Rajasthan desert is a part of the Great Indian Thar Desert, especially north western part of Rajasthan state covers herbal plants with huge potential value. Herbal plants of this region have great medicinal value and reported to have anti-cancer, antioxidant effect, anti-inflammatory and anti-microbial properties etc. These herbal plants contain several bioactive molecules such as flavonoids, sterols, anthocyanin, saponins etc. Anti -cancerous activity is the effect of natural, synthetics or biological chemical compounds to reverse, prevent or suppress carcinogenic progression. Plant derived chemotherapeutic agents are safe and non-toxic hence research is going on to investigate on their bioactive molecules.

Keywords: Thar desert, Herbal plants, Anti cancerous properties, Chemotherapeutic agents.

INTRODUCTION:

The Rajasthan desert, a part of great Indian Thar desert is a potential source of herbal plants. Rajasthan is the largest Indian state by area and seventh largest by population with potential source of medicinal plants. The region exhibits a great variety of physiography, geology, climate, and biotic conditions. Western part of Rajasthan blessed with several herbal plants like *Moringa* sps., *Euphorbia* sps., *Bauhinia* sps., *Ocimum* sps., *Datura* sps., *Acacia* sps., *Tephrosia* sps., *Capparis* sps., *Asparagus* sps., *Abrus* sps., *Azadirachta* sps., *Aloe* vera, *Catharanthus* sps., *Withania* sps. etc. These herbal plants have great medicinal properties and reported to have anti-cancer, anti- tumour, anti-stressor, radio sensitizers, immunomodulatory, anti-microbial, anti-oxidant effect etc. These herbal plants contain many anticancerous bioactive molecules such as vinblastine, diosgenin's, terpenoids, alkaloids, saponins, vincristine, vincine, tannins, polyphenols, anthocyanins, flavonoids etc.

Cancer is an abnormal growth of cells and one of the leading causes of death worldwide. Cancer is not one disease but group of distinct disorders. Anticancerous activity is the effect of natural synthetic or biological chemical agents to reverse, suppress or prevent carcinogenic progression. Radiation, carcinogens, mutagens, smoking, improper diet, virus infections etc. are the few major agents. Several synthetic or chemicals base agents are used to cure the disease but due to their toxicity or harmful effects on mankind's and hence research is going on to investigate the organic or plant derived chemotherapeutic agents.

Plants are one of the most important sources of medicine. The application of plants as medicine, dates to prehistoric periods, have figured in ancient manuscript such as The Rigved, The Bible, The Quran. The medicinal properties of plants are associated with their chemical constituents or primary as well as secondary metabolites. These active principles may be present in the storage organs of the plants viz: roots, seeds, fruits, leaves, bark, wood etc. The herbal plants have been studied for their ethnomedicinal aspect by many workers Chopra et al (1965), Singh, V. and Pandey, R. P. (1998), Singh et al. (2002), Katewa, S.S. and Sharma, R. (2006) and some studied the phytochemical aspects Sharma, L.K. and Kumar, A. (2006). Ethnobotanical

studied were done to use herbal plants for treatment of cancer by Kodura et al. (2007). Some anticancer plants of foreign origin were also analysed by Madhri, S. Pandey, G. (2009). Prerna et al. (2011) reviewed the herbs as anticancer.

OBSERVATION AND DISCUSSION

The herbal plants of Rajasthan Thar Desert belongs to family Apiaceae, Asteraceae, Asclepiadaceae, Balanites, Bignoniaceae, Capparidaceae, Caeselpiniaceae, Convolvulaceae, Chenopodiaceae, Cyperaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Lamiaceae, Mimosaceae, Moraceae, Papaveraceae, Rutaceae, Solanaceae, Zygophyllaceae.

An overview of potential native plant species which have anticancer properties like *Aloe vera*, *Azadirachta indica*, *Bauhinia variegata*, *Capparis decidua*, *Catharanthus* roseus, *Citrullus colocynthus*, *Euphorbia* caducifolia, *Moringa oleifera*, *Ocimum sanctum*, *Prosopis cineraria*, *Solanum nigrum*, *Withania somnifera* are well adapted xerophytic plants of western Rajasthan.

Aloe vera Linn.

- It belongs to family Liliaceae.
- It is a monocot with spiny, green, large leaves.
- Its leaf pulp shows antitumor and anticancer properties.
- it is used in assisting the cancer patients by stimulating the development of WBCs and non-cancerous cells.

Phytochemicals

- Oil, resin, glycosides, resins, polymannans, Anthrones, Coumarin, Aloesone, sterols, Saponins, Aloesin, Anthraquinones, Acetylated mannans etc.
- New type of cancer agents like Alexin and Aloe-emodin show selective activity against Neuroectodermal tumours.

Azadirachta indica A. Juss.

- It belongs to family Meliaceae.
- It is a perennial tree having droop elongated oval fruits and white flowers.
- It is Antibacterial, antidiabetic, antifungal, antiviral, anthelmintic, insecticidal, antitumor, pesticidal, antioxidant and anticancer.

Phytochemicals

- Triterpenes, tannins, flavanoids, Alkaloids like nimbolide, Gedunin, Azadirone, Azadirachtins, Mahamoodin, etc.

Bauhinia variegata Linn.

- Belongs to family Caesalpiniaceae.
- It is a medium sized ornamental tree with beautiful pinkish white flowers.
- Extract from barks and leaves are used orally to cure tumour in abdomen
- It also inhibits growth and spread of various cancers like breast, lung, liver, oral cavity, larynx etc.

Phytochemicals

- Glycoside cyanidin ,peonidin, flavonoids quercetin, rutin, galactosides, tannins, fatty acids, flavanone, apigenin, kaempferol, saponins, gums, sterols etc.

Capparis decidua

- It belongs to Family Capparadaceae
- It is commonly known as *"Kair"*
- It shows anticancer activity of stachydrine on solid tumour cells.
- It is a potent anti-metastatic agent

Phytochemicals

- alkaloids (isocodonocarpine, capparisinine, stachydrine, capparisine,), sterols, phenolics, flavonoids and fatty acids.

Catharanthus roseus (Linn.) G.Don.

- It belongs to family Apocynaceae.
- It is a perennial herb having white or pink flowers.
- Treatment of lymphoma, leukaemia, lung cancer can be treated by its leaves and flowers

Phytochemicals

- Vinodine, vindesine, serpentine, azmalicine, catharanthine, vinorelbine etc.
- Alkaloids like vincristine and vinblastine are most effective against cancer.

Citrullus* Colo*cynthes

- It belongs to Family Cucurbitaceae
- Common name is Chitrapala or Bitter Apple
- Due to its cytotoxic activities, it plays important role in anticancer drug development

Phytochemicals

- Flavonoids, glycosides, terpenoids, alkaloids, saponins, lectins

Euphoria caducifolia Haines.

- It belongs to family Euphorbiaceae.
- A dendroid shrub with pale green fleshy branches.
- It is a succulent plant of arid zone with red beautiful flowers and latex.
- Tumours and cutaneous eruptions can be cured using latex.

Phytochemicals

- Scopoletin, luteolin, euphol, triterpines, triucallol cycloartenol, flavonoids kaempferol, sterols, quercetin, etc.

- Strychnopentamine is effective against brain and breast carcinoma.

Moringa oleifera lamk.

- Belongs to family Moringaceae
- It is a perennial tree having white flowers and long pods.
- It is full of nutrients, vitamins, and minerals.
- Fresh fruits and stem barks crushed with little water and paste is applied to relieve in tumour.

Phytochemicals

- Glycosides niazirin, niaziminin, resins, gums, sterols, flavonoids like quercetin kaempferol, etc.
- Protection towards cancer is provided by antioxidants like Vitamin, Beta carotene etc.
- Cancer growth is reduced by Niaziminin extracted from leaves.

Ocimum sanctum Linn.

- It belongs to family Lamiaceae.
- Indian queen of herbs "Tulsi" is an aromatic, sacred herb of India
- It is a perennial herb having green (Rama) and black (Shyama) colour.
- It is antidiabetic, antibacterial, antifungal, antiviral, antimalarial, anticancer, anthelmintic, insecticidal, antioxidant, and antitumor.

Phytochemicals

- Glycosides, sterols, flavonoids like quercetin and kaempferol, alkaloids etc.
- Oleanolic acids and Ursolic acid extracted from leaves protect healthy cells from radiation damage and show antitumor and anticancer properties.

Papaver Somniferum

- It belongs to Family Papaveraceae
- Common name Poppy
- Noscapine acts as an antitumor alkaloid

Phytochemicals

- Alkaloids like Morphine, Codeine, thebaine, papaverine

Prosopis cineraria

- It belongs to family Fabaceae.
- Khejri is the state tree of the Rajasthan, also known as "Kalpatru" which means "the king of desert" due to its food, feed and medicinal value.
- It has high antioxidant activity
- The methanolic extract of the leaves of Prosopis cineraria are used which shows significant radical scavenging activity

Phytochemicals

- phenolic compounds, alkaloids, particularly flavonoids and phenolic acids, glycosides, tannins, steroids and triterpenoids.

Solanum nigrum

- It belongs to family Solanaceae.
- It acts as an herbal anticancer agent and one of active principles reported to be responsible for this action is Diosgenin.
- The methanolic extract has significant cytotoxicity effect on HeLa cell Line.

Phytochemicals

- Steroids, terpenoids, flavonoids, alkaloids, phenols and saponins.

Withania somnifera (Linn.) Dunal.

- It belongs to family Solanaceae.
- Indian Ginseng
- A short shrub with small whitish green flowers and berry orange red fruits.
- Roots are used as tonic and are famous for rejuvenating Ayurvedic herb with antistress, antioxidant and antidepressant properties.
- Roots and leaves are used to cure tumour and cancer.

Phytochemicals

- Flavanoids like kaempferol, sterols, quercetin etc.
- Steroidal lactones withaferin, alkaloids like somnitol, withaniol, saponins ,withasomnine ,withanone etc.
- Hydrocortisone contents are much lower than that of Steroidal which are used in common treatment of cancer cases.

CONCLUSION:

Herbal plants of western Rajasthan are rich source of medicinal properties contributing in the research of new drugs towards various disorders, diseases including cancer without showing toxicity on the individuals treated. Anticancer herbal plants like *Aloe vera*, *Azadirchta indica*, *Bauhinia variegata*, *Capparis decidua*, *Catharanthus roseus*, *Euphorbia caducifolia*, *Moringa oleifera*, *Prosopis cineraria*, *Solanum nigrum*, *Withania somnifera* are well adapted xerophytic plants used in treatment of cancer. *So,* Ayurveda is attaining a great significance in scope of cancer research.

REFERNCES

Chopra, R.N.,Nayar, S.L. and Chopra, I.C.(1965):Glossary of Indian Medicinal plants .C.S.R.I., New Delhi. Kapoor, B.B.S. and Ranga, P.(2003):Herbal Plants of Rajasthan Desert used in Folk Medicine. *The Tradition International Quarterly* 1 (2):25-28.

Kapoor,B.B.S. and Ranga, P.(2005):Protection and Conservation of Herbal Diversity of the Rajasthan Desert. *International J. Bioscience Reporter* 3(1):33-37.

Katewa, S.S. and Sharma,R.(2006): Ethnomedicinal Observation from certain watershed areas of Rajasthan. *Ethnobotany* 10:46-49.

Kodura, S.,Grieson, D.S. and Aflolayan, A.J.(2007). Ethnobotanical information of medicinal plants used for treatment of cancer in the eastern cape province. *South Africa. Curr. Sci.* 92: 906-908

Madhuri, S. and Pandey, Govind (2009): Some anticancer plants of foreign origin. *Curr. Sci.* 96(06) 25: 145-148.

Prema, R.,Sathish,S.D. and Chandrashekhar, K.B. (2011): Review on herbs as anticancer agents. *Int. J. of Pharm. And Ind. Research*. 01(02) : 105-108.

Purwal L.,Pathak AK., Jain UK., 2010. In vivo anti cancer activity of the leaves and fruits of Moringa oleiferaon mouse melanoma. *Pharmacology* online 1:655-665.

Paul R.,Prasad M.,Sah NK., 2011. Anticancer biology of Azadirachta indica L(neem) a mini review cancer Biology. *Ther* 12: 467-476.

Pandey MM., Rastogi S., Rawat AKS., 2013. Indian traditional ayurvedic system of medicine and nutritional supplementation. *Evid based complement Alternate Med.* DOI:10.1155/2013/3753267.

Singh, J.P., Beniwal, R.K., Kapoor, B.B.S. and Yadav, N.D.,(2002):Herbaceous Medicinal Plants of western Rajasthan In: Advances in Resource management of the Indian desert.(Eds.) B.B.S Kapoor, Ali, Mathur and Kaushik, Madhu Publications, Bikaner 165-186.

Singh, V. and Pandey. R.P. (1998): Ethnobotany of Rajasthan. Scientific Publishers, Jodhpur.

Sharma, L.K. and Kumar, A. (2006): Ethnomedicinal and phytochemical studies on some selected medicinal plants of Rajasthan, Indian Journal of Environmental Science, 1(10), 51-53.