GEOGRAPHY, ECOLOGY AND BIODIVERSITY OF RAJASTHAN ARID AND SEMI ARID REGIONS

Agnihotri Priyadarshini*
Department of Geography, Khalsa P G College, Sriganganagar, Rajasthan, India
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*Corresponding Author: Dr Priyadarshini Agnihotri
House No. 13, Street 1, Gandhi Nagar, Sriganganagar, Rajasthan, Jaipur, Rajasthan, India.

ABSTRACT
All human settlements subsist on land. Geography, ecology and biodiversity of a land is interrelated and Rajasthan with its arid and semi arid environment is fragile ecology. The state of Rajasthan is divided by Aravallis in North West and South East part and south east is better suited for biodiversity. Aravallis hills are most biodiversity rich region but the mining activity in major part of it is destroying biodiversity. This paper presents usefulness of this biodiversity and its conservation for human survival.

Keywords: Biodiversity, conservation, medicinal plants, semi arid and arid.

INTRODUCTION
All human settlements subsist on land. It is the land, which constitutes the single most important component of the total environment. The condition of the land on which the settlement is built, its effects on the surrounding lands and the changes, which occur in land use, would determine whether mankind has used these single most important resources wisely1-5.

Geography has important role to play in ecology of a place and biodiversity conservation is most important component of it. Rajasthan, the largest state in the country covers 3,42,239 sq.km. area between latitudes 23°3’ N and 30°12’ N, and longitudes 69°30’ E and 78°17’ E, have different agro-climatic zones vis-à-vis varied forms of micro-habitats, harbors a vast diversity of medicinal plant species, useful in traditional as well as in codified medicines6-9.
Rajasthan is the biggest state of the country (Fig.1). Rajasthan is divided by Aravalli’s in two portions differing in climatic conditions (Fig.2).
Rainfall pattern is also different as shown in Fig 4.

Biodiversity of Rajasthan: Rajasthan is very rich in biodiversity. The major families which include medicinal plants are Liliaceae, Fabaceae, Euphorbiaceae, Rutaceae, Solanaceae, Asteraceae, Cucurbitaceae, Rubiaceae, Poaceae, Malvaceae etc. Drugs are made from root (Asparagus racemosus Willd., Chlorophytum borivilianum L., Withania somnifera L. Dunal, Glycyrrhiza glabra L., Rauwolfia serpentine Benth. Ex. Kurz.), seeds (Abrus precatorius L., Croton tiglium L., Plantago ovata Forsk., Trigonella foenum-graceum L.), leaves (Senna sp., Datura innoxia Mill., Abrus precatorius L., Ocimum sanctum L., Mentha piperata), stem (Dioscorea bulbifera L., Tinospora cordifolia Willd.), flowers (Butea monosperma L. Taub., Bauhinia variegata L.).

Leguminosae is the largest family of flowering plants having around 650 genera and 18000 species10-21. The members of this family are distributed throughout the world in almost all habitats ranging from wet lands to dry and cold deserts, from tropical forest to alpine habitats and from sea level to 7000 m in Himalayan mountain12. They also encompass a wide variety of life form as tiny herbs, vines, lianas, shrubs to gigantic trees in the forests. However, the greatest diversity of legumes is in the tropics and subtropics.

Some of the important genera are Abrus sp., Alhagi sp., Arachis sp., Butea sp., Cajanus sp., Cicer sp., Derris sp., Glycine sp., Glycyrrhiza sp., Medicago sp., Pisum sp., Phaseolus sp., Psoralea sp., Sesbania sp., Tephrosia sp., Vicia sp. and Vigna sp..

Cassia senna :: It is known by different names in Hindi : Bhuikakhasa, Hindisana and Sonamukhi ; English : Alexandrian, Bombay, or Timevellysenna ; Sanskrit : Bhumiari, Pitapushpi, Swarnamukhi, swarnapatrika ; Rajasthan : Senna. The Senna leaves and pods contain sennasoides A, B, C, D, G, rhein, aloe-amine, Kaempferiein and iso-rhein in the free and compound glycoside forms (Srivastava et al., 1982, 1983). The leaves, pods and roots of Cassia senna contains rhein, chrysophenol, imodin and aloe-imodin.
Rajasthan Biodiversity is rich in medicinal plants:
The Indian system of medicine has identified 1,500 medicinal plants, of which 500 are commonly used. It is estimated that there are over 7800 medicinal drug-manufacturing units in India, which are estimated to consume about 2000 tons of herbs annually (Ramakrishnappa, 2003). According to a recent estimate of the World Health Organization (WHO), 60-80% of the world population especially in developing countries, relies on traditional medicine or plant based drugs for their primary healthcare needs. However a proper documentation of medicinal plants is lacking and many times adulterants are passed as genuine drugs. Right from its beginning, the documentation of traditional knowledge especially on the medicinal uses of plants, has provided many important drugs of the modern day. Even today this area holds much more hidden treasure as almost 80% of the human population in developing countries is dependent on plant resources for healthcare. The rural areas of Churu, plants are the major source of local medicine for their well being. Ethnobotanical studies in Rajasthan was conducted earlier, however, information on the uses of plants as traditional medicines has not been documented from different sources. Many of the plants that are used by the local people in Churu district find mention in ancient medicinal literature and are also used in different medicinal systems such as, the Ayurveda and Unani. For example Citrullus colocynthis that is used by the local people for curing rheumatism and leucoderma finds mention in Ayurveda for curing the same diseases. It is one of the main ingredients of ‘Narayan Churna’ and ‘Sukhvirechanivati’ ayurvedic medicines. In Unani system of medicine it is used for curing ‘kala-azar’. Similarly Momordica charantia, which the local people use for piles and blood diseases, is also used for curing asthma, ulcers and bronchitis in Ayurveda. In Unani it is used for curing syphilis and rheumatism.

DISCUSSION

Traditional phytotherapy is an art practiced by few older people (medicine men) whose empirical knowledge is respected by everyone in the village. They are familiar with the sign and symptoms of various common diseases and conditions and claimed to cure or allay symptomatically these maladies with the locally available plant drugs. It can be concluded from the study that the district has highly specialized xerophytic vegetation and has great potential for cultivation of xerophytic medicinal herbs. Biodiversity in the district is under the perpetual stress of drought and unsustainable use.

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