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Medicinal Plants of Bundelkhand Region used in Hepatoprotection

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Abstract: *Liver diseases are a major worldwide health problem. Hepatic disease is a term for a collection of conditions, diseases, and infections that affect the cells, tissues structures and liver functions. Liver has a wide range of functions, including detoxification, protein synthesis, and production of biochemical necessary for digestion and synthesis as well as breakdown of small and complex molecules. There are many allopathic medicines are available, used as hepatoprotective drug but have more side effects. Herbal drugs are more widely used than allopathic drugs as hepatoprotectives because they are inexpensive, have better cultural acceptability, better compatibility with the human body and minimal side effects. The present investigation is an attempt to identify hepatoprotective medicinal plants of the Bundelkhand region of Uttar Pradesh*

Keywords: Hepatoprotective plants, Liver disease and Bundelkhand region.

I. INTRODUCTION

Now days, National programs on health care have emphasized on herbal medicine. In India, fortunately, herbal medicinal flora is the richest natural resource. India being one of the major floristic regions of the world, well known for its medicinal wealth since the time of Rigveda. The plants are used in different systems of pharmacy like Ayurveda, Allopathy, Unani and Homeopathy. Medicinal plants satisfy the millions of ethnic and indigenous people living in tribal and rural sectors of India. Liver is a paramount organ of the body. It involved in the maintenance of metabolic functions and detoxification of the exogenous and endogenous challenges like xenobiotics, drugs, viral infections and chronic alcoholism (Dienstag and Isselbacher, 2001). Diverse homeostatic mechanisms are affected if liver function is impaired, with potentially serious consequences. Liver disease is a worldwide problem; Conventional drugs used in the treatment of liver diseases are sometimes inadequate and can have serious adverse effects. Herbal medicines are in great demand in the developed as well as developing countries for primary healthcare because of their wide biological and medicinal activities, higher safety margins and lesser costs (Chattopadhyay and Bhattacharyya, 2007). Modern drugs have very little to offer for alleviation of hepatic ailments, whereas most important representatives of phytoconstituents used for liver diseases chiefly on regional basis. One of the important and well documented uses of plant products is their use as hepatoprotective agents. Hence, there is an ever increasing need for safe hepatoprotective agent (Roy *et al.,* 2012).The present review is focused on different hepatoprotective plants of Bundelkhand region that have potential to cure the liver damage.

Bundelkhand Region:

Bundelkhand means "Bundela domain". This region is classified as a hot and dry locality and as a centre of diversity. There are various medicinal plants with medicinal values, most of them are used traditionally by local residents. Jhansi is the largest city in Bundelkhand and is a major cultural, educational, transport and economic hub. Other major towns of Bundelkhandare Konch, Kalpi, Chirgaon, Datia, Orai, Dabra, Mauranipur, Panna, Banda, Chitrakoot, Tikamgarh, Rath, Lalitpur, Sagar, Damoh, Jalaun, Hamirpur, Khajuraho, Panna, Mahoba, Banda and Chhatarpur.

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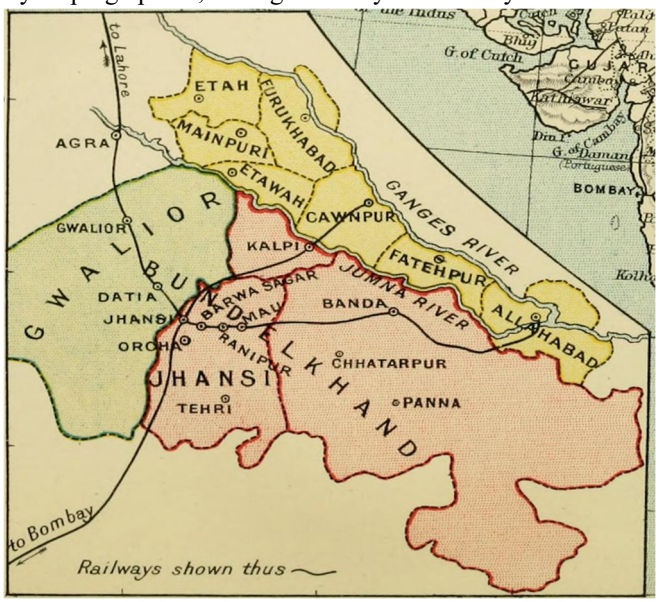
Geographical Distribution:

Bundelkhand region is one of the important regions of Uttar Pradesh. The geographical land area of Bundelkhand extends from the southern part of Uttar Pradesh to the North of Madhya Pradesh that encompasses an area of 70,000 sq Km between 230 20' and 260 20'N latitude; 780 20' and 780 25' E longitude. Many types of medicinal plants (Tree, Herb, & Shrub) are found in this region. Bundelkhand lies between the Indo-Gangetic Plain to the north and the Vindhya Range to the south. It is a gently sloping upland, distinguished by barren hilly terrain with sparse vegetation.



Map showing the Bundelkhand region with major cities and rivers

Herbal hepatoprotective plants:

Hepar, in Greek means liver. Hepatoprotective thus means liver protecting. Disturbances in the normal functioning of the liver may ultimately result in a diseased liver which could even prove to be fatal. A diagnosis of liver disease is suggested by various signs and symptoms like loss of appetite, fatigue, jaundice, occasional vomiting, and mild fever. Herbal-based therapeutics for liver disorders has been in use in India for a long time and has been popularized world over by leading pharmaceuticals. The use of natural remedies for the treatment of liver diseases has a long history, starting with the Ayurvedic treatment, and extending to the Chinese, European and other systems of traditional medicines. The 21st century has seen a paradigm shift towards therapeutic evaluation of herbal products in liver disease models by carefully synergizing the strengths of the traditional systems of medicine with that of the modern concept of evidence-based medicinal evaluation, standardization and randomized placebo controlled clinical trials to support clinical efficacy (Bone and Mills, 2001). A large number of plants and formulations have been claimed to have hepatoprotective activity. Nearly 160 phytoconstituents from 101 plants have been claimed by Pharmacopeia Foundation to possess liver protecting activity. In India, more than 87 plants are used in 33 patented and proprietary multi-ingredient plant formulations. In spite of the tremendous advances made, no significant and safe Hepatoprotective agents are available in modern therapeutics. Therefore, due importance has been given globally to develop plant-based hepatoprotective drugs, effective against a variety of liver disorders (Porchezhian and Ansari, 2005). India is followed by china as the largest producer of medicinal plants having more than 40% global diversity. Worldwide, the ayurvedic industry is put at $3 billion and is slowly gaining acceptance as an alternative system of medicine and health care. The world health organization (WHO) has projected that the global herbal market will grow to $5 trillion by 2050 (Sachan *et al.,* 2015).

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Detailed hepatoprotective medicinal plants in Bundelkhand region is given in Table.

S.No.	Plants Name	Common Name	Family	Parts used in hepatoprotection
1.	*Kalanchoe pinnata* Pers.	Cathedral bells / Air Plant / Leaf of life	Crassulaceae (Yadav and Dixit; 2003)	The juice of the leaves and the ethanolic extract of the marc left after expressing the juice were studied in rats against CCl_4 induced hepatotoxicity.
2.	*Cleome viscosa* Linn.	Asian spiderflower / tick weed	Capparidaceae (Gupta and Dixit; 2009)	The hepatoprotective activity of the ethanolic extract of leaves was investigated against thioacetamide-induced hepatotoxicity in rats.
3.	*Andrographis panniculata*	King of bitters / Kiryat, Kalmegh	Acanthaceae (Nagalekshmi *et al.,* 2011)	Used as tonic, fevers, worm dysentery, useful for children suffering from liver and digestive complaints.
4.	*Portulaca oleracea* L.	Purslane / Khursa, Kulfa	Portulacaceae (Farkhondeh *et al.,* 2019)	Plant is used for scurvy, liver diseases, spleen, kidney, bladder, cardio Vascular diseases, dysentery. It is also used as blood purifier in homoeopathy.
5.	*Solanum nigrum* L.	Makoi	Solanaceae (Krithika and Verma; 2019)	Freshly prepared plant extract is considered useful in treating cirrhosis of liver. Boiled leaves and tender schools are recommended to patients suffering from dropsy.
6.	*Withania somnifera* (L.) Duna	Ashwagandha	Solanaceae (Nayma *et al.,* 2012)	The roots are the source of the drug Ashwagandha. It is useful in cough, dropsy, rheumatism, and female disorders, and as a sedative in cases of sense of disability.
7.	*Emblica officinalis* Gaertn.	Amla	Euphorbiaceae (Jose and Kuttan, 2000)	Fruit powder used in anemia, gastric, jaundice, liver swelling, urinary, asthma, lucoria, bronchitis etc., leaves in boiled water used un blood sugar.
8.	*Terminalia belerica* Roxb.	Bahera	Combrataceae (Jadon *et al.*, 2007, Shukla *et al.,* 2005)	Extract of fruit used as tonic, astringent and hepatoprotection

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II. CONCLUSION

WHO, reported that about 80% of the world's population adopt herbal medicines for their basic healthcare needs in developing countries. Thus, use of herbal remedies is gaining popularity all over the world which is easy to procure and further easy to make formulation for the treatment of any type of hepatotoxicity. These therapies are fortunately very efficacious and cost effective therefore, attracting the research world for constant search of better drug, more potent active principles of the plant, and more palatable formulations. In this review article efforts made to compile the details of hepatoprotective plants, which will be useful to the society to venture in to a field of alternative systems of medicine. The Present study is an attempt to report the hepatoprotective plants of Bundelkhand region. This may be useful to researchers who are working in the area hepatoprotection.

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