

## PHYTOCHEMICAL STUDIES ON SOME ETHNOMEDICINAL PLANTS OF SHEKHAWATI REGION OF RAJASTHAN

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### INTRODUCTION

The Shekhawati region is spread over the Jhunjhunu and Sikar districts of Rajasthan state and surrounded by Haryana towards the East and the districts of Jaipur, Nagaur and Churu on other sides. The soil of Shekhawati largely comprises of desert sands and gravel in hilly areas. The region is traversed by a single rainy season and characterised by high velocity winds in summers. Rajasthan includes 12.44% of tribal population of the total population. The major tribes are Bhils, Garasia, Saharia, Meena, Damor, Patelia, kanjar, gadolia luhar etc. These tribes still prefer traditional medicines for their household remedies.

This region of Rajasthan is very rich in ethnomedicinal plants. Studies to identify and explore the possibilities of exploitation of wild desert plants of ethnomedicinal importance have revealed that there are several herbal species which have great potential to be used in drugs and pharmaceutical industries.

Ethnomedicinal plants of this region are good source of nutritionally and phytochemically important compounds.

### GENERAL IMPORTANCE OF THE RESEARCH WORK

Phytodiversity of the Shekhawati region of Rajasthan includes many species of ethnomedicinal plants. The ecology of this area may be very interesting, as the ethnomedicinal plants growing in this region have been facing specific climatic, edaphic, topographic and biotic conditions.

The qualitative and quantitative evaluation of primary metabolites i.e. nutritive contents, amino acids contents, mineral contents & ascorbic acid contents, is important in understanding the food and fodder value of these plants.

The qualitative and quantitative evaluation of secondary metabolites i.e. antimicrobial principles, flavonoids, from these plant species shows the medicinal value.

Antimicrobial screening of these plant species against certain Bacterial and Fungal pathogens is very significant to assign them of potential medicinal value. It is a wonderful work on these selected ethnomedicinal plant species.

These above mentioned studies will definitely enable us to suggest about their cultivation and collection at large scale and this method of income generation will be responsible for socio-economic upliftment of the society.

The present investigation is aimed to create awareness about the ethnomedicinal value of the plants and their uses to draw the attention of pharmacologists, phytochemists and pharmaceuticals.

It is an unexploited and untouched area with adverse climatic conditions, but medicinal wealth of this region is a potential source of phytochemicals of pharmaceutical interest. Hence, this research shall be significant for drug and pharmaceutical industries as well.

## REVIEW OF LITERATURE

The plants of Shekhawati region are well adapted to adverse conditions for their growth and production of secondary metabolites. It is necessary to evaluate the ecophysiological status of these medicinal plants under changing season to explore the possibilities of medicinal potential value (CSIR 1994). The studies will be done at vegetative as well as flowering and fruiting stage.

During the past so many years, information on ethnomedicinal plants have been compiled and recorded by a number workers like Dymock(1883), Watt, G.(1889-99), Dey, K.L.(1896), Nadkarni, K.M.(1926), Kirtikar, K.R. and Basu, B.D.(1933), Chopra *et al.*(1965), Chopra *et al.*(1968), Anonymous(1948-1976), Dey, A.C.(1998), Grover *et al.*(2002), Desai, B.S. and Jasraj, Y.T.(2003), Subramaniam, A. and Basu, V.(2003), Sood, S.K.*et al.*(2005) and Katewa, S.S, and Jain, A.(2006), Kapoor, B.B.S. and Ranga, P. (2008), Kapoor, B.B.S. and Rajuram Prajapat (2010), Kapoor, B.B.S., Swati Lakhera, Raksha Mishra and Sanjay Acharya(2010), Kapoor, B.B.S.,(2010), Menghani, E.*et al.* and Kapoor, B.B.S. (2011).

Animals and human beings principally depend upon plants for their food and fodder. The value of these plants as fodder species depends on their palatability, nutritive value and availability. So, the phytochemical investigation of such plants, providing food and fodder is necessary.

Mathur, Kapoor & Nag (1988), Purohit (1997), Acharya (1999), Harsh & Maheshwari (2000) Kapoor & Ritu (2001), Ritu (2001), Harsh (2002) and Shahid (2002), Kapoor & Sarika (2002) and Kapoor & Kalla (2003), Kapoor *et al.*(2004), Khatri (2005), Gir (2006), Khatri (2007), Singh

(2008), Bansal (2009), Arora (2010), Lakhera (2011) and Veena (2012) have studied the nutritive value of plants growing in Rajasthan desert.

Bains & Harsh (1996), Acharya (1999), Maheshwari (2001), Ritu (2001), Harsh (2002), Shahid (2002) and Kapoor *et al.* (2003), Kapoor *et al.* (2004), Khatri (2005), Gir (2006), Khatri (2007), Singh (2008), Bansal (2009), Arora (2010), Lakhera (2011) and Veena (2012) have evaluated the amino acid contents from some plants of Rajasthan desert.

Singh *et al.*, (1990) and Ritu (2000), Acharya (1999), Ritu (2001), Maheshwari (2001), Harsh (2002), Shahid (2002) Kapoor & Ranga (2003), Kapoor *et al.* (2004), Khatri (2005), Gir (2006), Khatri, (2007), Singh (2008), Bansal (2009), Arora (2010), Lakhera (2011) and Veena (2012) have analysed ascorbic acid contents from some arid zone plants of Rajasthan. Some of the plants are rich in secondary metabolites which are potential source of drug and essential oils. Biosynthesis of metabolites although controlled genetically is affected strongly by environmental influence. As a result there are fluctuations in the concentrations and quantities of secondary metabolites such as antimicrobials like flavonoids.

Researches on flavonoids have been conducted both in vivo and in vitro Flavonoids have been reported by many workers such as Harsh, (1982); Pathak and Manral, (1987); Mathur, (1988); Salama *et al.*, (1991); Jia *et al.*, (1993); Mou *et al.*, (1994); Karuza *et al.*, (1996); Ferreres *et al.*, (1997); Chen and Mentaneri, (1998) Lee-min-won *et al.*, (1999); Smolarz-Helena *et al.*, (2000); Gins *et al.*, (2000); El-Toumy *et al.*, (2001), Shahid (2002) and Kapoor & Ranga (2003), Kapoor *et al.* (2004), Khatri (2005), Gir (2006), Khatri (2007), Singh (2008), Bansal (2009), Arora (2010), Lakhera (2011), Kapoor *et al.* (2011), and Veena (2012).

A number of plants have been screened for their antimicrobial activity. Antimicrobial activity of various plant parts have been reported by Chandel *et al.*, (1993); Khan *et al.*, (1996); Akhtar *et al.*, (1997); Tereschuk *et al.*, (1997); Mendoza *et al.*, (1997); Mandeel *et al.*, (1999); Ahmad Ei Sawi *et al.*, (1999); Khan *et al.* (2001); Ahmad and Beg-Arina, (2001), Shahid (2002) and Ranga (2003), Kapoor *et al.* (2004), Khatri (2005), Gir (2006), Khatri (2007), Singh (2008), Bansal (2009), Arora (2010), Lakhera (2011), Kapoor *et al.* (2011), and Veena (2012).

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