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Antirheumatic plants used by indigenous people of Kawal Wildlife Sanctuary region, Telangana

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ABSTRACT

The main aim of the study is to document the antirheumatic plants used by the indigenous people of Kawal wildlife sanctuary region. The ethnic people utilize the medicinal plants for the treatment of rheumatic plants. The present study was recorded a total of 22 plant taxa pertaining to 22 genera of 17 families. Of these, Fabaceae dominate with four (4) species and 82% of plant taxa are indigenous and native. 128 key informants were interviewed from 43 villages of the area. Some important and widely used antirheumatic plants include *Atalantia monophylla*, *Azima tetracantha*, *Calotropis gigantea*, *Dregea volubilis*, *Lannea coromandelica* and *Senna occidentalis*.

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Introduction:

For the survival, health and wealth, majority of people in different regions on the globe depend on the forests and forest-based products. Indigenous people deeply belief in the system of traditional medicine in remote areas for their primary health care and veterinary purposes. According to World Health Organization (WHO), 80% of individuals in the world use traditional medicine for common ailments. The dependency on traditional medicine is increasing exponentially day-by-day to reduce the side effects of modern drug and also economic burden. Rheumatism is a chronic and serious problem of which cause joint pains, stiffness, swollen and tender to touch. One general study has revealed that nearly 180 million people (ca. 15%) are suffering from rheumatic pains in India (Naidu et al. 2012). Many plants are used for anti-rheumatic pains by indigenous people such as Gonds, Koyas, Naikpods. The traditional knowledge is passing through oral from generation to generation. The erstwhile Adilabad district stands top position with 7101.3 sq km (26.4%) of forest area in Telangana State (Anonymous, 2014) of which consists three wildlife sanctuaries, namely, Kawal, Sivaram and Pranahita and resource for many indigenous plants. Few ethnobotanical studies have been conducted by different workers in the region as of Ravishankar (1990), Swamy (2009), Murthy et al. (2010), Murthy (2012), Krishna et al. (2014), Omkar et al. (2011) and Mohan et al. (2017). There is no specific baseline data on antirheumatic plants from the region. Therefore, the present study is an attempt to provide field-based ethnic knowledge for the treatment of rheumatic pains in remote areas of Kawal wildlife sanctuary, Telangana.

Study area:

Kawal wildlife sanctuary was established in 1965 and declared as a sanctuary in 1999. It spreads over an area of 892.23 sq km. It is located between latitudes 19°05'-19°20'N and longitudes 78°32'-79°12'E (Image 1). It is spreaded in five forest divisions of erstwhile Adilabad district namely, Adilabad, Asifabad, Bellampalli, Jannaram and Nirmal divisions (Mohan et al., 2017). The major water resources for the living stock in the sanctuary are Kadem river, Kadem reservoir and Peddavagu (Murthy, 2010). The major ethnic groups in the core area are Gonds, Koyas, Naikpods, Pradhans (Pardhans), Kolams, Mannewars,

Thotis, Dadve, Gowari. Yerukulas and Lambadis are settled in the buffer areas. The average rainfall is 1040 mm. The maximum temperature rises up to 45°C in summer and falls to 4-5°C in winter (Suthari, 2013). The major commercial crops are paddy, cotton, maize, ground nut, green and black grams.

Methodology:

The ethno-botanico-medicinal information was documented during 2014-2016 from the tribal informants of Kawal wildlife sanctuary by involving aged persons, traditional practitioners, mid-wives, shepherds, etc. and compared the data with already published literature. Both the tribal men and women were actively participated in the interaction to open up their traditional knowledge. A total of 128 informants were interviewed of which 113 were male and 15 were female (8.8:1.2) from 43 villages (Table 1). All the necessary information about local (vernacular) names, plant parts used, preparation of drug, mode of administration and precautions to be taken to treat rheumatic pain were recorded for further phytochemical validation. The voucher specimens were made into herbaria and deposited at Government Degree College, Mancherial, Telangana.

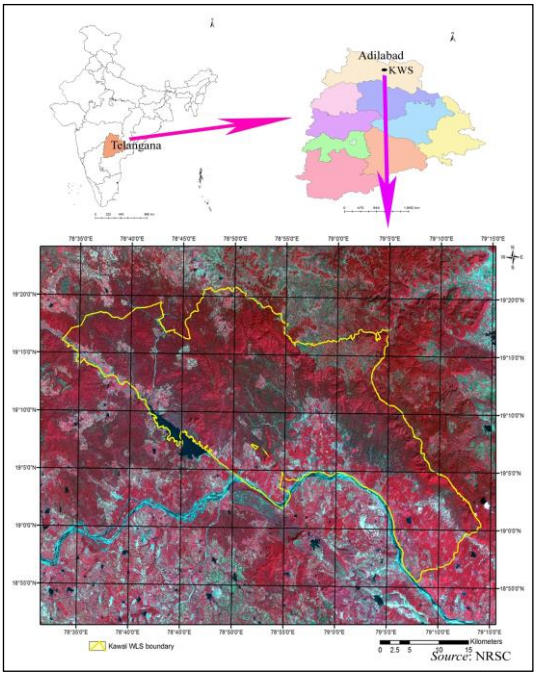

Image: 1. Study area map of Kawal wildlife sanctuary, Telangana

Table: 1. Ethnographic information of informants from 43 villages of Kawal wildlife sanctuary, Telangana, India.

	Village name	No. of Informants	Age		Village name	No. of Informants	Age
1	Rotiguda	3	60, 40, 71	23	Dongapalli	4	50, 45, 45, 45
2	Chintaguda	3	65, 43, 44	24	Malyal	3	23, 67, 48
3	Mandapalli	4	45, 65, 23, 55	25	Bommena	4	55, 30, 55, 50
4	Rendlaguda	4	45, 81, 30, 51	26	Paidipalli	4	70, 45, 60, 43
5	Kishtapur	0	Not available	27	Talamadugu	2	56, 48
6	Lotherre	4	62, 30, 23, 65	28	Juvviguda	2	57, 61
7	Lakshmipur	4	32, 40, 63, 60	29	Beersaipet	2	73, 45
8	Chinna Lotherre	4	80, 80, 58, 30	30	Lingapur	2	56, 76
9	Pedda Lotherre	4	56, 40, 55, 55	31	Mathyampeta	2	82, 41
10	Jannaram	3	65, 55, 47	32	Bhupet	2	53, 45
11	Sonapur Thanda	4	45, 56, 27, 39	33	Jamuldhara	2	58, 62
12	Kamanpalli	4	40, 65, 85, 26	34	Malyal	2	39, 61
13	Ponkal	4	70, 70, 22, 22	35	Singaraipet	3	48, 68, 57
14	Thommidi gudisela Palli	3	45, 27, 42	36	Loddiguda	2	49, 58
15	Morrigudem	4	30, 58, 75, 60	37	Tallapet	2	63, 80
16	Kalmati Thanda	4	50, 57, 38, 57	38	Nagasamudram	2	52, 49
17	Kalamadugu	4	46, 53, 51, 55	39	Thanimadugu	2	75, 38
18	Bhangu Naik Thanda	3	55, 45, 26	40	Malkulpet	2	49, 66
19	Kommuguda Thanda	3	44, 65, 38	41	Kothamamidipalli	2	58, 67
20	Murimadugu	3	75, 65, 80	42	Gundala	2	72, 59
21	Somuguda	4	40, 50, 35, 26	43	Bheempur	2	63, 49
22	Allinagar	5	38, 20, 23, 28, 50	Total villages: 43; Number of informants: 128			

Table: 2. Anti-rheumatic plant species used by the ethnic tribes of Kawal wildlife sanctuary.

	Local Name	Scientific Name	Growth form	Plant parts used
	Anacardiaceae			
1	Dumpidi	*Lannea coromandelica* (Houtt.) Merr.	Tree	Stem bark
	Apocynaceae			
2	Tella jilledu	**Calotropis gigantea* (L.) Dryand.	Shrub	Latex
3	Bandi gurija	*Dregea volubilis* (L.f.) Benth. ex Hook.f.	Climber	Whole plant
4	Sugandi pala	*Hemidesmus indicus* (L.) R.Br. ex Schult.	Climber	Whole plant
	Bignoniaceae			
5	Dundilamu	*Oroxylum indicum* (L.) Kurz	Tree	Stem bark
	Burseraceae			
6	Anduga	*Boswellia serrata* Roxb. ex Colebr.	Tree	Stem bark
	Capparaceae			
7	Nalla uppi	*Capparis sepiaria* L.	Climber	Stem bark
	Dioscoreaceae			
8	Govinda gadda	*Dioscorea pentaphylla* L.	Climber	Tuber
	Fabaceae			
9	Tella chinduga	*Albizia procera* (Roxb.) Benth.	Tree	Stem bark
10	Gatchakaya	*Caesalpinia bonduc* (L.) Roxb.	Climber	Leaf
11	Velturu	*Dichrostachys cinerea* (L.) Wight & Arn.	Shrub	Leaf
12	Adavi chennangi	**Senna occidentalis* (L.) Link	Herb	Leaf
	Malvaceae			
13	Tabisi	*Firmiana simplex* (L.) W.Wight	Tree	Root
	Meliaceae			
14	Turka vepa	*#Melia azedarach* L.	Tree	Leaf
	Menispermaceae			
15	Tippa teega	*Tinospora cordifolia* (Willd.) Miers	Climber	Stem
	Moraceae			
16	Marri	*Ficus benghalensis* L.	Tree	Latex
	Phyllanthaceae			
17	Usiri	*Phyllanthus emblica* L.	Tree	Root
	Plumbaginaceae			
18	Chitramulam	*Plumbago zeylanica* L.	Shrub	Root
	Rutaceae			
19	Adavi nimma	*Atalantia monophylla* DC.	Tree	Berry
	Salvadoraceae			
20	Tella uppi	*Azima tetracantha* Lam.	Shrub	Stem bark
	Ulmaceae			
21	Naulinara	***Holoptelea integrifolia* Planch.	Tree	Leaf
	Verbenaceae			
22	Takkali	*Clerodendrum phlomides* Hort. ex DC.	Shrub	Leaf

Note: *=Naturalized; #=Cultivated/running wild; **=Wild/Planted; remaining all the species (18) are wild and native.

Results

A total number of plant taxa recorded was 22 which belonged to 22 genera of 17 families used by the inhabitants of Kawal wildlife sanctuary for rheumatic pain treatment (Table 2). Fabaceae predominate with four (4) plant taxa, immediately followed by Apocynaceae (3) and 15 families were distributed with single genera and species. Of the species enumerated, most of the taxa are indigenous and wild (18; 81.8%), rest are naturalized (2; 9.1%), wild/planted and cultivated/running wild are each with single species (1; 4.55%) [Fig.1].

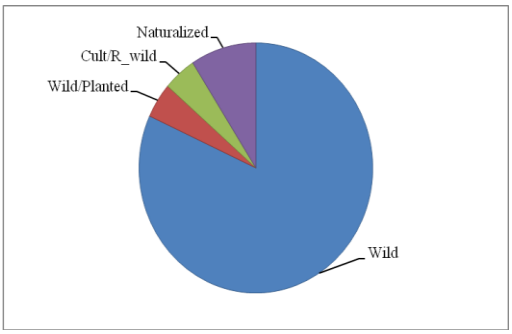

Fig: 1. Distribution pattern of wild antirheumatic plants.

As per the growth-forms, the plant species are majorly represented by trees (10; 45.5%), followed by climbers (6; 27.27%), shrubs (5; 22.72%) and herbs (1; 4.54%) [Figure.2]. The ethnic people are widely used the stem bark of *Albizia procera*, *Azima tetracantha*, *Boswellia serrata*, *Capparis zeylanica*, *Lannea coromandelica* and *Oroxylum indicum* and leaves of *Caesalpinia bonduc*, *Clerodendrum phlomides*, *Dichrostachys cinerea*, *Holoptelea integrifolia*, *Melia azedarach* and *Senna occidentalis*. Roots of *Firmiana simplex*, *Phyllanthus emblica*, *Plumbago zeylanica*, whole plant of *Dregea volubilis*, *Hemidesmus indicus*, latex of *Calotropis gigantea*, *Ficus benghalensis*, tubers, stem and berries of *Dioscorea pentaphylla*, *Tinospor*a cordifolia and *Atalantia monophylla* were used for the treatment of rheumatic pains, respectively (Table 1).

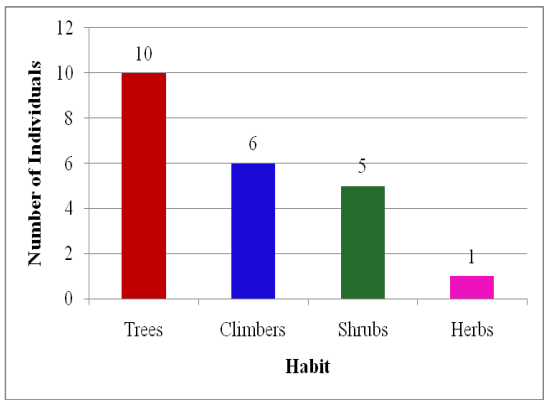

Fig: 2. Growth-forms of antirheumatic plants from Kawal wildlife sanctuary.

Discussion and Conclusion:

The recorded plant taxa have not been reported so far for the treatment of rheumatic pains from the study area. Most of the plants exist in the wild (18) and few of them are naturalized, planted and/or running wild. During the study, we observed that though the elderly people were illiterates, on the basis of their experience and personal observation with their fore-fathers, they can treat different common human and veterinary ailments. The existing knowledge on rheumatic treatment is declining due to the present generation, majorly youth are reluctant to learn their traditional knowledge from their ancestors, modernization, overexploitation of natural resources, forest fires and spread of invasive alien species. The present study on antirheumatic plants information obtained from the ethnic tribes is a valuable source for researchers in pharmacology and phytochemical fields. Though the present study lacks the information on problem centric activity, the data further needs investigations for which will be helpful in validating the present information. There is a need to carry out the phytochemical and pharmaceutical experimental studies to discover or formulate the new drugs in a systematic manner to treat the rheumatic pains for the welfare of human beings and healthy society

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