ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

Floristic Diversity of Angiosperms with special reference to their medicinal properties from Kota district of Rajasthan, India

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Manuscript Info

Manuscript History:

Received: 15 October 2015
Final Accepted: 29 November 2015
Published Online: December 2015

Key words:

Angiosperms, floristic diversity, medicinal property, Kota, Rajasthan.

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Abstract

The present study was carried out to document the diversity of Angiosperm taxa of Kota district of Rajasthan in India. It also highlights the various medicinal properties of plants found in this area. During the floristic survey a total of 133 species and intraspecific taxa of plants representing 99 genera in 46 families were recorded. The most speciose family found was Leguminoceae with 30 species, followed by Moraceae (7 spp.), Combretaceae and Rubiaceae (5 spp.), Euphobiaceae, Apocynaceae and Tiliaceae (4 spp.). Floristic composition shows presence of plants with evergreen tree, shrub and herbaceous habitat. Most of the species represents diverse medicinal importance and used to cure various diseases such as bronchitis, ulcer, diarrhea, dysentery, wound, eruptions, bone fracture, kidney stone and also for respiratory, digestive, urinary and skin disorders. The plants posses immunomodulatory, antidiabetic, anthelmintic, antiulcer, antitumour, antifungal, anti-trypanosomal, CNS depressant, hypoglycaemic, insecticidal and herbicidal activities etc. This work may expend the knowledge about the native vegetation and provide subsidies to assist future opportunities for documentation of the flora of Rajasthan.

INTRODUCTION

Rajasthan, the largest state in the country in terms of geographical area, is located in the north-western part of the country. It spreads over 3, 42, 239 sq.km area, which constitutes 10.4 per cent area of the country and has rich diversity of plants with different habitats. Kota division is geographically situated in southern part of the state which is also known as Hadoti region. The total area of the division is 24278.5 sq. km., which represents 7.1 percent area of the state (Singh et al., 2012). The floristic diversity of Rajasthan has documented by Singh and Pandey (1998) in details and comprehensive flora of Rajasthan in three volumes (Shetty and Singh 1987, 91, 93) published by Botanical survey of India. Studies that provide reference for taxonomic description about Kota District of Rajasthan are rare. Joshi and Shringi (2014) reported 221 species of angiosperm plants in Kota district by floristic analysis. Study by Sharma and Kumar (2010) and Katewa et al. (2008) highlights useful ethno-botanical information about the uses of plants by the tribal of Rajasthan as medicine. Analysis of data based on 72 remedies indicates 57 remedies are based on 45 different plant species (Nag et al., 2007). Katewa and Galav (2005) studied 48 species of Dicotyledonous and 2 species of Monocotyledonous plants used as herbal medicine in Rajasthan. During the study of Thakar et al. (2004) 37 plants species belonging to 25 families used for various diseases of skin, tumors, wounds, sores, swelling, lice, ticks, bone fracture, urinary and kidney stone problem, foot and mouth diseases have been recorded. This study aims to describe the floristic composition of Kota district of Rajasthan state in India, with the objective of the documenting the floristic composition of the species in the studied area, especially with their medicinal properties.

Material and Methods

Study Area

Kota district is situated in South of Rajasthan at latitude 30° 39.125' N and longitude 78° 31.156' E and is located along the eastern bank of the Chambal river of the Rajasthan State. The Chambal River is natural boundary of Kota district that separates Kota from neighboring Sawai Madhopur, Tonk and Bundi districts. The predominant climate is moderate. The average rainfall is 1516 mm, with a rainy period between June and September and the temperature varies between 33.10^{o}C in the hottest months and 4.7^{o}C during the coldest months. The zone has fertile black soils with natural vegetation in the form of woodlands, parklands and open forests.

Data Collection

Extensive surveys of the study area were conducted between August 2013 to May 2014 to prepare a list of plant species occurring in different seasons, registering plants with herbaceous, shrubby and arboreal habits. The families were classified according to Bentham and Hooker Classification (1862 – 1883). Identifications were done with the help of different floras and herbaria of Rajasthan (Bhandari, 1990; Singh and Shetty, 1987-93; Sharma, 2002). The collected materials are deposited in the Herbarium of the University of Rajasthan, India. Information about the medicinal properties was collected from the local habitants and literature related to indigenous medicinal system of India.

Result and Discussion

During the floristic survey, a total of 133 species representing 99 genera distributed in 46 families were recorded from Kota district of Rajasthan (Table 1). This includes 94 species of canopy and understorey trees, 22 species of shrubs and 15 species of herbs. The most speciose families found were Leguminoceae with 30 species, followed by Moraceae (7 spp.), Combretaceae and Rubiaceae (5 spp.), Euphorbiaceae, Apocynaceae and Tiliaceae (4 spp.). The most speciose genera include *Ficus* (6 spp.), followed by *Acasia and Grevia* (4 spp.), *Terminalia, Albizia, Dalbergia, Indigophera, Ziziphus and Tamarix* (3 spp. each). Jain et al. (2005) also mentioned Leguminoceae as the most dominant family in terms of species richness in the studies area.

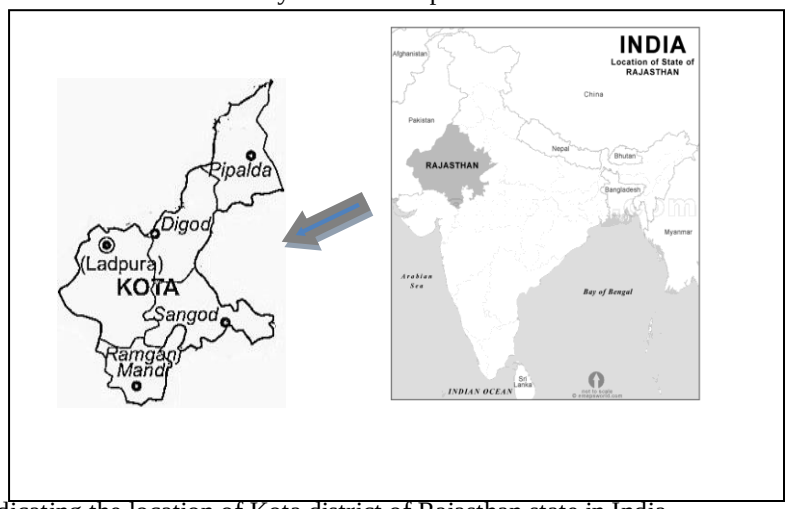

Figure1. Map indicating the location of Kota district of Rajasthan state in India.

After careful screening many species have been recognize as important medicinal plant for various properties. For effective treatment, decoction or infusion of different parts of plants such as bark, fruit, leaves, roots, seeds, latex are used. Out of 133 species most of the species represent antioxidant, antibacterial, anti-inflammatory, anti-HIV-1, antitumor, antiulcer, hepatoprotective, analgesic activity. Many species also used to cure various diseases such as diarrhea, hemorrhages, bronchitis, arthritis, kidney stone etc. and also for respiratory, digestive, urinary and skin disorders. A list of plant species along with their local name, habit and medicinal uses in different ailments are given in table1.

The studied Kota district of Rajasthan presents a high diversity of species with numerous medicinal uses, thus there is a need to inventoried and create database regarding the flora of Kota district of Rajasthan. May this gathered information will provide further opportunities for developing new taxonomic database and herbal formulations.

Table 1: List of Angiosperm plant species along with their family, local name, habit and medicinal uses

Sr. No.	Family and Binomial	Local Name	Habit	Medicinal Properties	References
	Acanthaceae				
1.	*Adhatoda vasica* (Nees)	Vasuti	Shrub	Antitubercular, antimutagenic, antiulcer, antiasthmatic hepato-protective activities	Singh et al, 2011
2.	*Barleria prionitis* (Linn)	Baansa	Shrub	Antioxident and antimicrobial activity, also used to cure snake bite etc.	Karuppusamy, 2007
3.	*Pupalia lappacea* (L.)Juss	Chirchitta	Herb	Used to cure urinary disorders	Punjani, 2010
	Anacardiacceae				
4.	*Buchanania Lanzan* (Sprengel)	Chironge	Tree	Used as cardiotonic, astringent and for skin diseases	Mitra et al., 1982
5.	*Lannea coromandelica* (Linn)	Gumpena	Tree	Used to cure diarrhoea dysentery, wound, eruptions sprains and bruises etc.	Kaur et al., 2012
6.	*Mangifera indica* (Linn)	Aam	Tree	Antiinflammatory, analgesic and hypoglycemic activity	Takhar et al., 2004
	Annonaceae				
7.	*Annona squamosa* (Linn)	Sitaphal	Tree	Cytotoxic, genetoxicity, anti-tumour activity	Saleem et al., 2008
8.	*Miliusa tomentosa* (Roxb.) J. Sinclair	Umbia	Tree	Used to cure respiratory disorders	Reddy et al., 2006
9.	*Polyathia longifelia*	Ashok	Tree	Cytotoxic function, antiulcer, hypoglycemic and hypotensive effect.	Jain et al., 2005
	Apocynaceae				
10.	*Carissa spinarum* (Linn)	Karonda	Shrub	Antioxident, antimicrobial activity	Takhar et al., 2004
11.	*Holarrhena antidysenterica* (linn.) Wall	*Karva*-indrajau	Herb	Anti diabetic and antipathogenic activity	Shah et al., 2010
12.	*Wrightia laevis*	Dudhi	Tree	Antimicribial and antioxidant activity	Jain et al., 2005
13.	*Wrightia tomentosa* (Roxb.)	Dudhi	Tree	Used to cure snake and scorpion bites, renal complications and menstrual disorders	Chakravarti et al., 2012
	Asclepiadaceae				
14.	*Calotropis gigantea* (R.Br.)	Safed Akara	Tree	Antipyretic, analgesic, sedative, anticonvulsant activity	Mishra et al., 2007
15.	*Calotropis Procera* R. Br	Arka	Tree	Analgesic, antitumor, anti-helmintic, antioxidant, hepato-protective, anti-diarrheal, anti-microbial activity	Sharma, 2011
16.	*Leptadenia pyrotechnica* (Rorak)	Khip	Shrub	Antioxidant , anti-inflammatory and anti-cancer activity	Verma et al., 2014
	Bignoniaceae				
17.	*Dolicandron falcate*	Medhshingi	Tree	Antioxidant, antibacterial, anticancer, anti-inflammatory, antiallergenic and anxiolytic activities.	Bansode et al., 2013

18.	*Stereospermum syaveolensdc*	Padar	Herb	Antihyperglycemic, antioxidant, diuretic,hepatoprotective activity	Jain et al., 2004
19.	*Tecomella undulata* (Sm.) Seem	Rohida	Tree	Immunomodulatory, smooth muscle relaxant , antifungal, anti termite, anti HIV activity	Kumawat et al., 2012
	Bixaceae				
20.	*Cochlospermum gossypium* (Linn)	Girnar	Tree	Hepatoprotective, antimicrobial, Wound healing activity	Avachat et al., 2011
	Boraginaceae				
21.	*Cordia dichotoma* (Frost)	Lasura	Tree	Immunomodulator, antidiabetic, anthelmintic, antiulcer and antilarvicidal activities	Nazim et al., 2013
22.	*Cordia gharaf* (R & S)	Nani Gundi	Tree	antidiabetic, antiulcer, anti-inflammatory, analgesic and immunomodulator activity	Sharma et al., 2013
	Bursaraceae				
23.	*Boswellia serrata* (Roxb.)	Salai	Tree	Anti-infalmmatory, antiulcer activity, also used to cure osteoarthritis	Singh and Atal, 1986
24.	*Commiphora wightii*	Guggal	Tree	Used to cure obesity, rheumatoid arthritis, osteoarthritis and sciatica etc.	Jain et al., 2011
	Cactaceae				
25.	*Opuntia dillenii* (Ker-Gawl.) Haw.	Naagaphani	Tree	Astringent and haemostatic. Used to cure irritable bowel, mucous colitis etc.	Takhar et al., 2004
	Capparidaceae				
26.	*Capparis spinosa* (Lank)	Kabra	Tree	Antihyperglycemic, antioxidant and hypolipidemic effect	Dangi and Mishra, 2010
27.	*Capparis spinosa* L.	Caper	Shrub	Ant diabetic activity	Jain et al., 2005
28.	*Cleome gynandra* (Linn)	Ajagandha	Herb	Antioxidant, anticancer, anti-inflammatory, free radical scavenging activity.	Jain et al., 2005
29.	*Crateva religiosa* (Roxb.)	Barna	Tree	Laxative, contraceptive, anti-mycotic, antiperiodic activity	Patil et al., 2011
	Celastraceae				
30.	*Elaeodendron glaucum* (Pers.)	Jamrassi	Tree	Antidiabetic and used to relieve headache and as a fumigatory in hysteria	Lanjhiyana et al., 2011
31.	*Maytenus emarginatus*	Baikal	Tree	Used to cure digestive disorders, fever, rheumatoid arthritis and Cancer	Sagwan et al., 2011
	Combretaceae				
32.	*Anogeissus latifolia* (Wall)	Dhawra	Tree	Hypolipedemic, antiulcer, antidiabetic activity	Parvathi et al., 2009
33.	*Anogeissus pendula* (Edgew)	Kardhai	Tree	Used for skin disorders, tumours, wounds, sores, swelling, lice, ticks, bone fracture, urinary and kidney stone problem etc.	Rabbani et al., 2013
34.	*Terminalia arjuna* (Roxb.) W. & A	Koha	Tree	Used as cardiac tonic and to cure sores, ear ache, dyspepsia etc.	Jain et al., 2005
35.	*Terminalia bellerica (*Gaertn.*)* Roxb.	Bahera	Tree	Anti- HIV-1, antibacterial,	Gilani et al., 2008

				antispasmodic activity	
36.	*Terminalia tomentosa* (Roxb.ExDC)	Sadar	Tree	Useful in ulcers, bone fractures, haemorrhages, bronchitis, diarrhoea etc.	Jain et al., 2005
	Compositae				
37.	*Xanthium strumarium* (Linn)	Adhashishi	Herb	Antitumour, antifungal, anti-trypanosomal, CNS depressant, hypoglycaemic, insecticidal and herbicidal activities.	Kamboj and Saluja, 2010
	Cornaceae				
38.	*Alangium salvifolium* (Linn)	Akel	Tree	Antidiabetic, diuretic,anticancer, anti-inflammatory, laxative, anti-microbial, and anti-epileptic activity	Sharma et al., 2011
	Cucurbitaceae				
39	*Citrullus colocynthis* (Schard)	Indrayan	Herb	Used to cure constipation and digestive disorders	Takhar et al., 2004
	Ebenaceae				
40.	*Diospyros cordifolia (*Roxb.)	Bistendu	Tree	Analgesic, antidiabetic, anti-inflammatory activity	Katewa et al., 2004
41.	*Diospyros melanoxylon* (Roxb.)	Tendu	Tree	Antihyperglycemic, antitumor antimicrobial, and wound healing activity	Ande et al., 2012
	Ehretiaceae				
42.	*Ehretia laevis* (Roxb.)	Tambolia	Tree	Used to cure mouth blisters and dysuria.	Jain et al., 2008
	Euphorbiaceae				
43.	*Bridelia retusa* (spreng)	Khaja	Tree	Used in treatment of rheumatism, kidney stone and also as astringent.	Ranjan and Deokule, 2013
44.	*Emblica officinalis* (Gaertn.)	Amla	Tree	Antioxidant, antitussive anti-pyretic, analgesic, immune-modulatory, cytoprotective, and gastroprotective activity	Khan, 2009
45.	*Euphorbia hirta* (Linn)	Dudh ghas	Herb	Used to cure female disorders, respiratory ailments, worm infestations, dysentery, jaundice, gonorrhea and digestive problems.	Kumar et al., 2010
46..	*Euphorbia nivulia* (Buch.-Ham.)	Thor	Tree	Wound healing, haemostatic, larvicidal, insecticidal, cytotoxic and nematicidal activity.	Mahajan and Badgujar , 2011
	Flacourtiaceae				
47.	*Flacourtia indica* (Burm. f.) Merr.	Kakai	Shrub	Anti-Inflammatory, antioxidant, antimicrobial, hepatoprotective, antimalarial, anti-diabetic and anti asthmatic activity	Kota et al., 2012
	Lamiaceae				
48.	*Ocimum americanum* (Linn)	Basil	Herb	Analgesic and anti-inflammatory activity	Hannan et al., 2011
	Leguminoceae (Fabaceae, Caesalpiniaceae and Mimosaceae)				
49.	*Acacia jacquemontii* (Benth)	Boanli	Shrub	Astringent, spasmolytic, demulcent, anthelmintic activity	Saini et al., 2008

50.	*Acacia leucophloea*	Reonja	Shrub	Antimicrobial, antimalerial and anti- diarrheal activity	Jain et al., 2005
51.	*Acacia nilotica* (Linn.)	Babul	Tree	Antihypertensive, antibacterial, antidaibetic, cytotoxic and antimutagenic activity	Malviya et al, 2011
52.	*Acasia Senegal* (L.) Willd	Kumattha	Tree	Rots are used to cure dysentery, gonorrhea and leprosy.	Thakar, 2004
53.	*Albizia lebbeck* (Benth)	Kala siris	Tree	Immunomodulatory, anti-mutagenic and adeptogenic activity	Faisal et al., 2012
54.	*Albizia odoratissima* (L.F.) Benth	Siris	Tree	Antimicrobial activity and also used to cure bronchitis	Padal et al., 2010
55.	*Albizzia procera* (Roxb.) Benth	Gurar	Tree	Used to cure diseases like cancer, liver disorders, diabetes, atherosclerosis etc.	Sivakrishnan et al., 2014
56.	*Bauhinia racemosa* (Lam.)	Jhinjha	Tree	Antibacterial, analgesic, antitumor, antipyretic activity	Reddy et al., 2008
57.	*Bauhinia variegata* (Linn)	Kachnar	Tree	Used to cure skin diseases, beneficial to control blood pressure	Jain et al., 2008
58.	*Cassia Auriculata* (Linn)	Anwal	Herb	Antihelmintic, antidiabetic, antiulcer activity	Senthilkumar et al., 2013
59.	*Cassia fistula* (Linn)	Amaltas	Tree	Antioxident, larvicidal and ovicidal activity	Govindarajan, 2009
60.	*Dalbergia latifolia* (Roxb.)	Shisham	Tree	Antioxident, antipyretic activity	Jain et al., 2005
61.	*Dalbergia paniculata* (Roxb.)	Dhoban	Tree	Antimicrobial, antidiarrheal, anti-ulcerogenic, larvicidal anti-spermicidal, and mosquito repellant activity	Jain et al., 2005
62.	*Dalbergia sisso* (Roxb.)	Sisso	Tree	Used to cure dysentery	Reddy and Raju, 2005
63.	*Delonix regia* (Boj. Ex. Hook)	Gulmohar	Tree	Antifungal, antibacterial and antioxidant activity	Salem et al., 2014
64.	*Dichrostachys cinerea* (Wight & Arn)	Kunali	Tree	Used to cure headache, toothace, dysentery, elephantiasis etc.	Vennapoosa et al., 2013
65.	*Erythrina suberosa*	Gadapalash	Tree	Used to cure fever, liver ailment, rheumatism, endoparasitic diseases	Jain et al., 2005
66.	*Hardwickia binata* (Roxb.)	Anjan	Tree	Antifungal and antibacterial activity	Gunaselvi et al., 2010
67.	*Indigofera cordifolia* (Heyne)	Bekar	Shrub	Used to cure swell mouth	Tayade and patil, 2005
68.	*Indigofera linifolia* (Retz)	Baker	Shrub	Used to cure cut and wounds	Kumar and Abbas, 2012
69.	*Indigofera oblongifolia* (Forek)	Jhil	Shrub	Used to cure stomach pain	Joshi et al., 2010
70.	*Mimosa rubicaulis* (Lam.)	shiah-kanta	Shrub	Antitumor, antimicrobial, and anti oxidant activity	Thakar, 2004
71.	*Ougeinia oojeinensis* (Roxb.) Hochr.	Tinas	Tree	Used to cure constipation and urinary disorders, anthelmintic activity	Samyal et al., 2013
72.	*Parkinsonia aculeate* (Linn)	Vilayti kikar	Tree	Antioxidant, used to cure arthritis, fever and as a nerve stimulant	Kumar et al., 2011
73.	*Pithecellobium dulce* (Roxb.) Benth	Jangal Jalebi	Tree	Used to cure diarhoea, chest congestion, ulcers, indigestion,	Pradeepa et al., 2013

				dysentery etc..	
74.	*Prosopis chilensis* (Molina) Stuntz	Vilayati Khejari	Tree	Antidepressant, antibacterial, antiantiviral activity	Jain et al., 2005
75.	*Prosopis spicigera*	Khejri	Tree	Antihelminthic, used to cure leprosy, bronchitis, asthma etc.	Kumar et al., 2011
76.	*Pterocarpus marsupium* (Roxb.)	Bija	Tree	Antihyperglycemic, Anti-hyperlipedemic activity,	Shukla et al., 2000
77.	*Tamarindus indica* (Linn)	Imli	Tree	Used to cure diarrhea, digestive disorders, malaria etc.	Jain et al., 2005
78.	*Tephrosia hookeriana* (W & A)	Kallu kolingi	Shrub	Anti-inflammatory, Anti-plasmodial, Anticancer, Used to cure ulcer, pimples, cough,	Thirupathy et al., 2013
	Lythraceae				
79.	*Woodfordia fruticosa* (Linn)	Dhataki	Shrub	Antimicrobial, used to cure female disorders, hepatitis and jaundice etc.	Takhar et al., 2004
	Malvaceae				
80.	*Kydia calycina (*Roxb.)	Kapasia	Tree	Febrifuge, anti rheumatic, used for body pains and skin diseases	Jain et al., 2005
81.	*Thespesia lampas* (Dalz & Gibbs)	Bankapasi	Herb	Antioxidant and anti-Lipoxygenase activity	Kumaraswamy et al., 2008
	Meliaceae				
82.	*Azadirachta indica* (Juss)	Neem	Tree	Anti-inflammatory, antipyretic analgesic and immunostimulant activity	Jain et al., 2005
83.	*Melia azedarach* (Linn)	Bakain	Tree	cardioprotective, analgesic, anticancer, antiulcer, antipyretic, antiplasmodial and male contraceptive properties	Azam et al., 2013
	Moraceae				
84.	*Ficus benghalensis*	Bayan	Tree	Used to cure ulcers, gonorrhea, diarrhea, dysentery and diabetes and also for obstinate vomiting.	Mandal et al., 2010
85.	*Ficus cordifolia* (Roxb.)	Paras pipal	Tree	Used to cure foot and mouth disease of cattle	Kamble et al., 2012
86.	*Ficus glomerata* (Roxb.)	Gular	Tree	Antiinflammatory, analgesic and antipyretic activity	Sudhakar et al., 2012
87.	*Ficus hispida* (Linn)	Kalput	Gobla	Used to cure psoriasis, anemia, piles, jaundice, hemorrhage, diabetes, hepatitis, dysentery and biliousness etc.	Ali et al., 2011
88.	*Ficus lacer* (Buch- Ham)	Pakar	Tree	Used to cure leucorrhoea erysipelas, epistaxis etc.	Jain et al., 2005
89.	*Ficus religiosa* (Linn)	Pipal	Tree	Used to cure gynaecological problems, dysentery, diarrhea and nervous disorders etc.	Makhija et al., 2010
90.	*Morus alba* (Linn)	Shahtoot	Tree	Anthelmintic, antistress, hypo-cholesterolemic, immune-modulatory, nephroprotective activity	Devi et al., 2013
	Moringaceae				
91.	*Moringa oleifera* (Lanka)	Shajna	Tree	Antipyretic and wound healing activity	Jain et al., 2005
	Myrtaceae				

92.	*Eucalyptus globules*	(Safeda)	Tree	Used to cure allergies, arthritis, bronchitis burns etc.	Jain et al., 2005
93.	*Syzygium cumini* (Linn.)	Jamuna	Tree	Chemopreventive,anti-neoplastic and radioprotective properties	Swami et al., 2012
	Oliaceae				
94.	*Nyctanthes arbor tristis* (Linn)	Harsingar	Herb	Antileishmaniasis, antiviral, antifungal, antipyretic and antihistaminic activity	Sah and Varma, 2012
95.	*Schrebera swietenioides* (Roxb.)	Mokha	Tree	Antidiabetic, antioxident and used to cure heamorrhoids	Jadeja et al., 2006
	Papilionaceae				
96.	*Butea monosperma* (lamk.) taub	Palash	Tree	Antibacterial, antifungal, Hypoglycemic activity	Sindhia et al., 2012
	Phyllanthaceae				
97.	*Bridelia retusa*	Kaji	Tree	Antiamebic, antianemic, anti-bacterial, anticonvulsant, anti-diabetic, antidiarrhoeal, anti-nociceptive activity	Jain et al., 2005
	Rhamnaceae				
98.	*Ziziphus mauritiana* (Lamk.)	Ber	Tree	Sedative, antimicrobial, hypoglycemic, antiplasmodial, anti-infectious, antidiabetic, diuretic, analgesic, anti-convulsant activity	Goyal et al., 2012
99.	*Zizyphus numulari* (Burm. F) W & A	Jharber	Shrub	used to treat scabies and Skin disease.	Takhar et al., 2004
100.	*Zizyphus oenoplia* (Mill)	Makoh	Shrub	Used to cure hyperacidity, ascaris infection, abdominal pain and healing of wounds	Bhowal et al., 2012
	Rubiaceae				
101.	*Adina cordifolia* (Heath)	Haldu	Tree	Antiamoebic, antiinflammatory, antinociceptive, antifertility activity	Rokade et al., 2013
102.	*Gardenia turgida* (Roxb.)	Papra	Tree	Used to cure leucorrhoea, dog bite, scorpion string, epilepsy, stone, stomachache, snake bite etc.	Takhar et al., 2004
103.	*Ixora arborea* (Roxb. & Sees)	Jilpai	Tree	antioxidant, antimicrobial activity	Jain et al., 2005
104.	*Mitragyna parvifolia* (Roxb.) Korth	Kalam	Tree	analgesic, antipyretic, anti-inflammatory, antiarthritic, anthelmentic and antioxidant activity	Ghatak et al., 2014
105.	*Morinda tinctoria* (Roxb.)	Aal	Tree	Anticonvulsant, larvicidal anti-bacterial activity.	Shanthi et al, 2013
	Rutaceae				
106.	*Aegle marmelos (Correa)*	Bael	Herb	Cardioprotective, anticancer antispermatogenic, , radio-protective activity	Sharma et al., 2007
107.	*Feronia limonia* (Linn)	Kaith	Tree	Antitumour, antifungal and CNS depressant activity	Qureshi et al., 2010
	Salvadoraceae				
108.	*Salvadora persica*	Peelu	Tree	Antimycotic, antifertility, analgesic activity	Kumar et al., 2012
109.	*Salvodera oleoides*	Jall	Tree	Used in the treatment of cough,	Jain et al., 2005

				enlarged spleen, rheumatism fever and throat swelling etc.	
	Santalaceae				
110.	*Santalum album* (Linn)	Chandan	Tree	Astringent, genitourinary and Bronchial tracts disorders, diuretic and stimulant activity	Sindhu et al, 2010
	Sapindaceae				
111.	*Dodonaea viscosa* (Linn)	Kalapinai	Shrub	Analgesic, antiviral, anti-inflammatory and antiulcer activity	Rani et al., 2009
112.	*Sapindus emarginatus* (Vahl)	Ritha	Tree	Antipruritic, antihyperlipidemic, antimicrobial, CNS depresent activity	Arora et al., 2012
113.	*Schleichera oleosa* (Lour.)	Kusum	Tree	Anticancer activity	Bhatia et al., 2013
	Sapotaceae				
114.	*Madhuca indika*	Madhuka	Tree	Antipyretic, hepatoprotective, antiprogestational, antiestrogenic activity.	Akshatha et al., 2013
115.	*Manilkara hexandra (Roxb.)*	Khirni	Tree	Antimicrobial, antioxidant, anti inflammatory activity	Malik et al., 2012
	Simaroubaceae				
116.	*Ailanthus excelsa* (Roxb.)	Anya	Tree	Used to cure asthma, inflammatory diseases, ulcer, stomach problems, cancer, cardiac and hepatic disorders	Takhar et al., 2004
117.	*Balanites aegyptiaca* (Linn)	Hingol	Tree	Antihelmintic antibacterial, antivenin activity	Saboo et al., 2014
	Solanaceae				
118.	*Datura metel* (Linn)	Dhatura	Herb	Used to relieve painful swelling, insanity and fever, has ant-diarrheal activity	Ratan et al., 2011
119.	*Solanum xanthocarpum* (Schrad)	Bhurangini		Anti- tussive, antispasmodic, antihistaminic, hypotensive activity	Jain et al., 2012
	Sterculiaceae				
120.	*Helicteres isora* (Linn)	Marod phalli	Shrub	Used to cure colic , scabies, gastropathy and dyssentary etc.	Sabale et al., 2012
121.	*Sterculia urens* (Roxb.)	Karaya	Tree	Used to cure leucorrhea	Venkata et al., 2005
	Tamaricaceae				
122.	*Tamarix articulata* (Vahl)	Farash	Tree	Antibacterial, analgesic activity	Takhar et al., 2004
123.	*Tamarix dioica* (Rexh)	Zhao	Tree	Antitumor activity	Takhar et al., 2004
124.	*Tamarix dioica* (Roxb.)	Jhau	Tree	Used to cure cough, diarrhea, dysentery, pectoral affection, piles, leucorrhoea and spleen trouble etc.	Mahmood et al., 2011
	Tiliaceae				
125.	*Grewia flavescens* (Juss)	Kali syali	Shrub	Used to cure kidney stone and urinary tract disorders	Sharma et al., 2011
126.	*Grewia hirusta* (Vehal)	Gurusukri	Shrub	Used to cure leucoderma, scabies and rjeumatism	Takhar et al., 2004
127.	*Grewia tenax* (Fersk)	Gango	Tree	Used in treatment of bone fracture, bone strengthening and tissue healing	Sharma et al., 2012
128.	*Grewia villosa* (Wild)	Pipali	Shrub	used to treat wounds, and	Goyal, 2012

				syphilis and stomach-ache etc.	
	Ulmaceae				
129.	*Holoptelea integrifolia* (Roxb) Planch	Chirivilva	Tree	Used for the treatment of cancer of bladder, convulsions and inflammation etc.	Jain et al., 2005
	Verbanaceae				
130.	*Clerodendron multiforum*	Arni	Shrub	Used to cure syphilis, typhoid, cancer, jaundice and hypertension etc.	Shrivastav et al., 2007
131.	*Tectona grandis* (Linn.)	Sagwan	Tree	Used to cure bronchitis, biliousness, dysentery, diabetes, leprosy and hyperacidity	Khera et al., 2013
	Zygophyllaceae				
132.	*Fagonia cretica* (Linn)	Dhanvyaas	Herb	Used to cure respiratory disordes	Patil et al., 2008
133.	*Tribulus terrestris* (Linn)	Gokhru	Herb	Antimicrobial and anti inflammatory activity	Baburao et al., 2009

Acknowledgement

We express our sincere thanks to the Director, Herbarium of University of Rajasthan for providing information and for their precious aid in identifying the plant material during field trips in the studied area. We also thank the residents from the Kota district, who supported the development of the research in this area.

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