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Ethnomedicinal Information on Stem Bark Plants in Salur Mandal, Parvathipuram Manyam District, Andhra Pradesh, India

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ABSTRACT The bark performs many functions throughout the life of the plant, and some plant barks contain bioactive compounds. In recent years, bark has become a more prominent resource for bio chemical exploration and production of different compounds. The foremost objective of the current research is to perceive the knowledge of stem bark practised by the primitive people living in Saluru mandal of Parvathipuram Manyam district in Andhra Pradesh, India. A total of 64 species were identified in this investigation. They belong to 57 genera of 31 families of angiosperms and are regularly utilised to treat 50 types of diseases. Among these, *Dalbergia latifolia* is known to have more medicinal properties. Due to forest burning and illegal felling of trees, their availability is drastically reduced. Unless planned programs are not implemented to conserve the natural vegetation in this region, it will be difficult to continue the legacy of folklore.

INTRODUCTION

As synthetic medicines are at the forefront in curing diseases by adopting advanced technology, the importance of herbal medicines among the people is gradually decreasing (Singh 2007). Today's society, which is universally giving importance to wellness, is turning away from the use of synthetic drugs to herbal medicine as a means of disease prevention. The utilisation of plants as medicine is as old as human civilisation and is still revered today as a source of cure for disease (Sharma et al. 2007). The bark is the outermost layer of stems and roots of woody plants. Plants with bark include trees, shrubs and woody climbers. The bark has outstanding significance because of its special chemical components and unusual structure (Pasztory et al. 2016). The state of Andhra Pradesh in India paid little attention to ethnomedicinal studies peculiarly on stem bark. In this context, an investigation was made on the stem bark used by the tribes living in Salur mandal of Parvathipuram Manyam district for various diseases.

Objectives

The main focus of this research is to explore medicinally important stem barks, along with method of preparation, mode of administration practised by primitive groups, and also observes the threats of tree species.

METHODOLOGY

The present investigation is taken up in Salur mandal, Parvathipuram Manyam district in north Andhra Pradesh, India. It is situated between 18.5333^0 North latitude and 83.2167^0 Eastern longitudes. It is bound on the east by Bobbili, Ramabhadrapurama mandals of Vizianagaram District, on the west by Koraput district of Odisha state, in the north by Makkuva and south by Pachipenta mandals. Salur is encompassed with evergreen jungle and bonds of hills on two margins, and by rivulet Vegavathi on the other two. The forest area of Salur mandal covers 28230.91 hectares. The methodology and way of approach for ethnomedicinal inquiry is acquired from the classical efforts of Jones (1941), Schultes (1956, 1962) and Jain (1981, 1987, 1989). Prominence was given chiefly to extensive field work in the tribal habitats. Interviews were conducted with heads of the villages, local people and this information was cross checked, critically analysed and documented with the help of local floras (Venkaiah 1988). The uses reported by the tribe were compared and thoroughly screened with the impor-

tant works such as Panigrahi (1963), Tarafder (1983), Mudgal (1987), and other recent works so as to evaluate and bring medicinal plants. Nomenclature of each species has been brought updated as per the Plants of World Online website. Ethnomedicinal surveys were undertaken for one and half years in three seasons, during August 2022 to January 2024. The most common tribal in Salur mandal are Konda Kapu, Konda Doras, Savara, Gadaba, and Muka Dora from whom medicinal properties of stem, drug composition and mode of administration were recorded. There are a total 88 villages in this mandal, out of which 48 tribal habitats have been covered for the present study. At least one or two informants (male and female) were interviewed from each village. 52 people between the age group of 25-85 years actively participated in this interaction.

RESULTS

Outcomes of this work have disclosed 64 species belonging to 57 genera and 31 families that are regularly utilised to manage 50 kinds of ailments. List of plants, which are ethno medicinally useful for treating various diseases are given in alphabetical order with vernacular name, family, habit and process of administration (Table 1). Family wise review of species report that the family Fabaceae is a dominant one with 18 species, followed by Moraceae and Apocynaceae (5 each), Rubiaceae having 4 species, Anacardiaceae 3, and Sapindaceae, Rutaceae, Meliaceae, Loganiaceae each having 2. The remaining 21 families are represented by one species each (Table 2). The collected therapeutic uses with the number of plant species are classified into thirteen categories such as, 3 species for fractures (4.68%), 2 species for wounds and injuries (3.2%), 8 species for digestive disorders (12.5%), 2 species for urinary tract diseases (3.12%), 16 species for general disorders (25%), 6 species for gynaecological issues (9.37%), 3 species for neurological disorders (4.68%), 2 species for eye diseases (3.12%), 10 species for dental issues (15.62%), 7 species for skin conditions (10.93), 3 species for respiratory tract diseases (4.68%), 1 specie used as an analgesic (1.5%), and 1 specie is used as antivenins (1.56%) (Table 3). According to the gathered information, for 13 diseases, the bark is utilised in conjunction with other plant components, for 4 diseases it is used with different ingredients, and for the remaining 33 diseases, only one type of bark is employed as a remedy.

DISCUSSION

Out of 64 plants, 57 stem barks are used to cure a single disease. But *Saraca asoca* and *Prosopis cineraria* bark are used to cure two diseases, and *Dalbergia latifolia* is used to treat three diseases. These barks are taken as a powder or as decoction or in the form of a paste, either separately or in combination with another plant part or material. The dosage of the drug is not specific, and it is given based on the severity of the disease and age of the person. The preparation and administration practices of drugs vary across different localities within this region but the variations are subtle.

The findings of this study show that local communities use various plant parts for a wide range of medicinal purposes, with several similarities to ethnobotanical practices documented in existing research. For instance, in the study area, the bark decoction of *Dalbergia latifolia* is used for body pain and skin disorders, which aligns with the observation by Matya Raju et al. (2022) that it is used to treat fever in Ganga Raju Madugula, Visakhapatnam District, Andhra Pradesh. Similarly, the stem bark decoction of *Ailanthus excelsa*, utilized for postnatal care in the study area, is also reported by Vidyullatha et al. (2023) for the treatment of leucorrhoea and menorrhagia in Paderu division, Andhra Pradesh. In the case of *Lannea coromandelica*, the stem bark is used for leucorrhoea in the study area, while Ralte and Singh (2024) documented its application in Mizoram for treating chronic ulcers and wounds. The *Azadirachta indica* bark paste, commonly used for skin diseases in the study area, is similarly reported in Benin as a decoction for arterial hypertension and gastric ulcers (Aboua et al. 2024). The stem bark paste of *Moringa oleifera*, applied to treat tooth caries in this study, is also used by the Mishing community in Sivasagar District, Assam, for epilepsy (Buragohain et al. 2024). Additionally, *Butea monosperma* stem bark is used for treating hematuria in the study area, whereas Venumadhav et al. (2024) note its application for menorrhagia in the Narsipatnam division of Visakhapatnam district. Finally, *Bombax ceiba* stem bark decoction, used for dysentery in the study area, is reported by Rao and Rao (2024) as being used for body heat regulation in Bapatla

Table 1: Botanical name, vernacular name, family, habit and ethnomedicinal practices of stem bark used by the tribes of Salur mandal, Parvathipuram manyam district

S. No.	*Botanical name*	*Vernacular name*	*Family*	*Habit*	*Ethnomedicinal practice*
1	*Adina cordifolia* (Roxb.) Brandis	Bandrichettu	Rubiaceae	Tree	Stem bark is powdered into paste. One spoon is administered daily to cure skin diseases.
2	*Aegle marmelos* (L.) Corrêa	Maredu	Rutaceae	Tree	Stem bark is grinded with water and two drops are instilled into the eyes for treating eye infections.
3	*Ailanthus excelsa* Roxb.	Peddamanu	Simaroubaceae	Tree	Stem bark decoction is used to overcome postnatal treatment
4	*Albizia lebbeck* (L.) Benth.	Dhirisena	Fabacea	Tree	Bark vapor is inhaled to relieve migraine
5	*Allophyllus cobbe* (L.) Forsyth f.	Sallikunkudu	Sapindaceae	Shrub	Stem bark paste is used in treating skin eruptions
6	*Alstonia venenata* R.Br.	Konda ganneru	Apocynaceae	Tree	Dried bark powder with Neem oil is applied to cure leprosy spots
7	*Ampelocissus latifolia* (Roxb.) Planch.	Bedisithivva	Vitaceae	Climber	Bark is mixed with jeera powder. 1 gram is taken at empty stomach to improve appetite
8	*Artocarpus heterophyllus* Lam.	Panasa	Moraceae	Tree	Stem bark powder is taken to cure dysentery
9	*Azadirachta indica* A.Juss.	Vepa	Miliaceae	Tree	Bark paste is used in the treatment of skin diseases, and leprosy wounds
10	*Barringtonia acutangula* (L.) Gaertn.	Kumbi chettu	Lecythidaceae	Tree	Stem bark is ground into paste by adding ginger juice and taken orally for gastric disorders
11	*Bauhinia purpurea* L.	Kanchana chettu	Fabacea	Tree	Bark mixed with roots of *Ziziphus mauritiana* used in treating dysentery.
12	*Bauhinia racemosa* Lam.	Aare	Fabacea	Tree	The stem bark juice is mixed with goat milk and taken orally for treating epilepsy.
13	*Bombax ceiba* L.	Burgu dudi	Bombacaceae	Tree	The bark decoction is used for curing dysentery
14	*Buchanania lanzan* Spreng.	Jarumamidi	Anacardeaceae	Tree	Stem bark powdered with stem bark of *Syzygium cumini* and the powder is given in treating diarrhea in children
15	*Butea monosperma* (Lam.) Kuntze	Modhuga	Fabaceae	Tree	Stem bark is made in to paste and the paste is administered on empty stomach to treat hematuria
16	*Butea superba* Roxb. ex Willd.	Modhuga teega	Fabaceae	Climber	Stem bark is grinded into paste and it is applied around the eyes as a layer to overcome insomnia.
17	*Calophyllum inophyllum* L.	Ponna	Calophyllaceae	Tree	The bark decoction is used for treating hemorrhoids
18	*Calotropis procera* (Aiton.) W.T.Aiton	Tella jilledu	Apocynaceae	Shrub	Bark grinded with the stem bark of *Alangium salvifolium*, this paste is administered for snakebite
19	*Capparis Zeylanica* L.	Aridonda	Capparaceae	Climber	Stem bark decoction is gargled to cure throat pain
20	*Casearia tomentosa* Roxb.	Chilakaduddillu	Salicaceae	Tree	Bark powder with curd taken one spoon to cure anal fistula
21	*Cassia fistula* L.	Rella	Fabacea	Tree	Dried bark powder mixed with black pepper powder taken with water to cure bronchitis
22	*Catunaregam spinosa* (Thunb.) Tirveng.	Mullamanga	Rubiaceae	Shrub	Bark powder mixed with ginger and honey taken to control bowel movement

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Contd. Table 1:

S. No.	Botanical name	Vernacular name	Family	Habit	Ethnomedicinal practice
23	*Ceiba pentandra* (L.) Gaertn.	Buruga chettu	Malvaceae	Tree	Stem bark paste is applied on the affected areas to cure Lichen planus pigmentosus
24	*Chloroxylon Swietenia* DC.	Billakarra	Rutaceae	Tree	Stem bark is crushed with root bark of *Ziziphus oenopolia* and the extract is administered for epilepsy
25	*Cynanchum annularium* (Roxb.) Liede and Khanum		Dhudabaddu	Apocynaceae	Climber Bark powder mixed with the seed powder of Cassia fistula, this is taken orally to cure asthma in children
26	*Dalbergia latifolia* Roxb.	Iridi	Fabacea	Tree	Bark decoction is used in curing body pains, ulcers, wounds, eczema and pimples.
27	*Dillenia indica* Linn.	Revadachettu	Dilleniaceae	Tree	Stem bark is grinded into paste, 5 gram of paste administered to cure stomachache
28	*Diospyros chloroxylon* Roxb.	Ellinda	Ebanaceae	Tree	Stem bark paste mixed with boiled barley water to reduce body swellings
29	*Ficus hispida* L.f.	Kukkabodda	Moraceae	Tree	Stem bark powdered with black pepper seeds to control intestinal ulcer
30	*Ficus racemosa* L.	Medichettu	Moraceae	Tree	Stem bark is grinded and made into decoction. One glass of decoction mixed with one spoon of rock salt powder is used to gargle for curing mouth ulcers.
31	*Ficus religiosa* L.	Raavi	Moreceae	Tree	The Bark powder with milk is used in the treatment of gonorrhea
32	*Gmelina arborea* Roxb. ex Sm.	Gummadi	Lamiaceae	Tree	Stem bark paste is applied in the treatment of bone fractures.
33	*Holoptelea integrifolia* (Roxb.) Planch.	Nemali chettu	Ulmaceae	Tree	Stem bark is grinded with water and the filtrate is administered in the morning and evening time for one month to cure fistula
34	*Lannea coromandelica* (Houtt.) Merr.	Gumpena chettu	Anacardiaceae	Tree	Stem bark is grinded with the roots of *Garuga pinnata* and *Catunaregam spinosa* are taken in equal quantities. 10 gram of paste is administered along with water to control leucorrhea
35	*Litsea ligustrina* (Nees) Fern.-Vill.	Naramavidi	Lauraceae	Tree	Stem bark is grounded into paste, it is bandaged on the bone fracture to repair
36	*Madhuca longifolia* (L.) J.F.Macbr.	Ippa	Sapotaceae	Tree	Bark is used in treating bleeding and spongy gums, also used in curing tonsillitis
37	*Mangifera indica* L.	Mamidi	Anacardiaceae	Tree	Bark paste is taken internally to cure stomach pain
38	*Morinda coreia* Buch.-Ham.	Thogara	Rubiaceae	Tree	Bark powder with garlic cloves are taken as a food supplement to reduce cholesterol
39	*Moringa oleifera* Lam.	Munaga	Moringaceae	Tree	Stem bark paste relieves pain of tooth carries
40	*Oroxylum indicum* (L.) Kurz	Dakki chettu	Bignoniaceae	Tree	Bark and turmeric paste one spoon is taken orally 3 times daily to cure jaundice
41	*Pavetta indica* L.	Papiti chettu	Rubiaceae	Shrub	Stem bark juice is recommended for jaundice. Equal volume of stem bark mixed with root of *Boerhavia diffusa* paste used for epilepsy.

Contd. Table 1:

S. No.	Botanical name	Vernacular name	Family	Habit	Ethnomedicinal practice
42	*Phanera vahlii* (Wight and Arn.) Benth.	Addaku	Fabaceae	Climber	Bark paste is boiled in water, filtered and the juice is applied to cure scabies
43	*Phyllanthus reticulatus* Poir.	Puroodupulla	Phyllanthaceae	Shrub	Stem bark is used in treating pyorrhea
44	*Pithecellobium dulce* (Roxb.) Benth.	Simachintha	Fabacea	Tree	Bark ash used as tooth powder to clear gingivitis
45	*Pongamia pinnata* (L.) Pierre	Kagu	Fabaceae	Tree	Bark decoction is used to wash to cure lichen planus skin
46	*Prosopis cineraria* (L.) Druce	Jammi	Fabacea	Tree	Bark and leaf decoction are used in treating rashes, scaly skin due to herpes, bad odor in the mouth, tooth ache.
47	*Pterocarpus marsupium* Roxb.	Maddi	Fabaceae	Tree	Bark decoction is taken daily twice to control high blood pressure
48	*Saraca asoca* (Roxb.) W.J.de Wilde	Asoka	Fabacea	Tree	Dried bark powder is used for excessive menstruation and uterine infections
49	*Schleichera oleosa* (Lour.) Oken	Busi chettu	Sapindaceae	Tree	Fresh bark paste one spoon daily is used for blood purification
50	*Senegalia chundra* (Roxb. ex Rottler) Maslin	Sandra	Fabacea	Tree	Stem bark paste is used for brushing cures all tooth problems
51	*Senegalia torta* (Roxb.) Maslin, Seigler.	Korintha	Fabacea	Tree	Stem bark mixed with breast milk to cure whooping cough in infants
52	*Senna auriculata* (L.) Roxb.	Nela tangedu	Fabaceae	Shrub	The bark is used as astringent and used for gargle in sore throat
53	*Sesbania grandiflora* (L.) Poir.	Agasthya chettu	Fabacea	Tree	Stem bark powder mixed with water to eject the phlegm by vomiting
54	*Shorea robusta* C.F.Gaertn.	Guggilam	Dipterocarpaceae	Tree	Bark paste is applied externally to cure mumps
55	*Soymida febrifuga* (Roxb.) A.Juss.	Chimiti	Meliaceae	Tree	Bark juice is taken three times at the onset of menses to control menstrual flow
56	*Streblus aspera* Lour.	Barinika chettu	Moraceae	Tree	Stem bark paste is applied to fix bone fractures
57	*Strychnos nux-vomica* L.	Musidiki	Loganiaceae	Tree	Stem bark powder mixing with coconut oil and applied to heal cuts
58	*Strychnos potatorum* L.f.	Indupa chettu	Loganiaceae	Tree	Two spoons bark powder is taken once in a day to cure cholera
59	*Terminalia bellirica* (Gaertn.) Roxb.	Thani chettu	Combretaceae	Tree	Bark powder and tender leaves of *Tinospora cordifolia* made into paste, it is taken with buttermilk in treating jaundice
60	*Tiliacora acuminate* (Lam.) Miers	Kappateega	Menispermaceae	Climber	Stem bark paste is taken 1 gram daily in treatment of postnatal problems
61	*Vachellia nilotica* (L.) P.J.H.Hurter & Mabb.	Thella thumma	Fabacea	Tree	Decoction made with bark is used for gargling of mouth as antibacterial mouth wash
62	*Woodfordia fruticosa* (L.) Kurz	Jeguru	Lythraceae	Tree	Stem bark is grinded into paste and it is boiled with cow milk and mixed with honey. 3 gram of paste is administered daily till cure tuberculosis
63	*Wrightia arborea* (Dennst.) Mabb.	Themadapala	Apocynaceae	Tree	Bark decoction is taken orally for curing urinary problems by tribes
64	*Wrightia tinctoria* (Roxb.) R.Br.	Ankudu	Apocynaceae	Tree	Decoction of the leaves and bark is taken for stomachache

Table 2: Family-wise utility of ethnomedicinal plants

Rank	*No. of plant taxa*	*No. of families*	*Family/Families*
1	18	1	Fabaceae
2	5	2	Moraceae, Apocynaceae,
3	4	1	Rubiaceae
4	3	1	Anacardiaceae
5	2	4	Sapindaceae, Rutaceae, Meliaceae, Loganiaceae

Note: The remaining 21 families (Table 1) are represented by one species each

Table 3: Therapeutic uses with the No. of plant species

S. No.	*Acting against*	*Ailments*	*No. of species utilized*
1	Antivenins	Snakebite	1
2	Fracture	Bone fractures	3
3	Wounds and Injuries	Cuts	1
		Wound healing	1
4	Digestive system diseases	Bowel movement	1
		Diarrhea	1
		Improve appetite	1
		Indigestion	1
		Dysentery	3
		Intestinal ulcer	1
5	Urinary tract diseases	Hematuria	1
		Urinary problems	1
6	General disorders	Blood purification	1
		Insomnia	1
		Blood pressure	1
		Body swelling	1
		Cholera	1
		Cholesterol	1
		Fistula	2
		Hemorrhoids	1
		Jaundice	2
		Mumps	1
		Stomachache	2
		Vomiting	1
		Whooping cough	1
7	Gynecological issues	Leucorrhea	1
		Excessive menstruation	1
		Gonorrhea	1
		Menstrual flow	1
		postnatal treatment	2
8	Nervous system diseases	Epilepsy	3
9	Eye diseases	Eye infections	2
11	Dental and oral problems	Mouth ulcers	1
		Pyorrhea	1
		Gingivitis	1
		Mouth wash	1
		Sore throat	1
		Throat pain	1
		Tonsillitis	1
		Tooth ache	2
		Tooth carries	1
12	Pain management	Migraine	1
13	Respiratory tract diseases	Tuberculosis	1
		Asthma	1
		Bronchitis	1
14	Skin diseases	Scabies	1
		Skin disease	2
		Lichen planus	2
		Leprosy spots	2

district, Andhra Pradesh. These comparisons underscore the diverse and widespread use of these plant species for medicinal purposes across different regions, reflecting the shared ethnobotanical knowledge among indigenous communities.

CONCLUSION

The present investigation is taken up in Salur mandal, Parvathipuram Manyam district in Andhra Pradesh, India with the objectives of collections, identification and invention of stem bark employed in ethnomedicinal applications by the tribal groups as a part of their way of life and to contribute the development of modern medicines. This traditional knowledge of using the barks of 64 plant species in various forms to basically protect health from various diseases belonging to 13 categories has not come to light till now.

RECOMMENDATIONS

The rich forest cover of the study area has been under persistent disruption due to the ever expanding neighbouring cultivated fields and illegitimate cutting of trees. In these circumstances plant wealth and ethnomedicinal knowledge will be left for the future generations only if the government and non-governmental organisations come forward and preserve them. Medicinal plants should be grown in the grounds of government offices, schools, colleges and must educate tribal people about stem bark collection.

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REFERENCES

Aboua SCMJ, Houètchégnon T, Sourou BNK, Wédjangnon AA, Azongnidé G, Ouinsavi C AIN 2024. Diversity of plant species with ethnomedicinal potential for treating arterial hypertension and gastric ulcers, two chronic diseases: An ethnobotanical assessment in Benin. *Ethnobotany Research and Applications*, 29(18): 1-22.

Buragohain P, Das B, Nath M, Sarma PJ, Boro M, Roy S, Nath N 2024. Traditional knowledge of ethnomedicinal plants used by the Mishing community in Sivasagar District, Assam (India). *Plant Science Today*, 11(sp1): 184-196.

Jain SK 1981. *Glimpses of Indian Ethnobotany*. New Delhi: Oxford and Publishing Co.

Jain SK 1987. *A Manual of Ethnobotany*. Jodhpur: Scientific Publishers.

Jain SK (Ed.) 1989. *Methods and Approaches in Ethnobotany*. Lucknow: Society of Ethnobotanists.

Jones VH 1941. The nature and status of ethnobotany. *Chron Bot*, 6(10): 219 - 221.

Matya Raju S, Ramalakshmana J, Padal SB 2022. Ethnomedicinal plants used by tribal people of Ganga Raju Madugula, Visakhapatnam District, Andhra Pradesh, India. *Scholars Academic Journal of Biosciences*, 10(6): 138-141.

Mudgal V 1987. Recent ethnobotanical works on different States/Tribes of India – A synoptic treatment. In: SK Jain (Ed.): *A Manual of Ethnobotany*. New Delhi: Deep Publications, pp. 58-68.

Official Home Page of Plants of the World 2024. From<https://powo.science.kew.org/> (Retrieved on 20 May 2024).

Panigrahi G 1963. Gandhamadan Prabat, Orissa- A potential source of important indigenous drugs. *RRL Bull*, 1: 111-116.

Pasztory Z, Mohacsine I, Gorbacheva G et al. 2016. The utilization of tree bark. *BioResources*, 11: 7859-7888. 10.15376/biores.11.3.

Ralte L, Singh YT 2024. Ethnobotanical survey of medicinal plants used by various ethnic tribes of Mizoram, India. *PLOS One*, 19(5): 1-26.

Rao CB, Rao PB 2024. Ethnobotanical survey of medicinal plants used by traditional healers in Bapatla District, Andhra Pradesh, India. *Journal of Emerging Technologies and Innovative Research*, 11 (8): 186–194.

Schultes RE 1956. The strange narcotic snuff of Eastern Coloia: Their sources, preparation and effect on an American botanist. *London News*, 229: 520-521.

Schultes RE 1962. The role of ethnobotanist in the search of new medicinal plants. *Lloydia*, 25: 257-266.

Sharma Alok, Shanker C, Tyagi Lalit, Singh Mahendra, Rao V 2007. Herbal medicine for market potential in India: An overview. *Acad J Plant Sci*, 1.

Singh A 2007. Herbal medicine – Dream unresolved. *Ethnobotanical Leaflets*, 11: 195-198.

Tarafder CR 1983. Traditional medicinal plants used by tribals of Ranchi & Hazaribagh district, Bihar – Plants used in stomach troubles. *Journal of Economic and Taxonomic Botany*, 4(3): 891-896.

Venkaiah M 1988. *Studies on the Vegetation and Flora of Vizianagaram District, A.P.* PhD Thesis. Visakhapatnam: Andhra University.

Venumadhav R, Veerakishore I, Gilakathula S, Kokkanti M 2024. Ethnobotanical appraisal of medicinal plants used by inhabitants of Narsipatnam Division, Visakhapatnam District, Andhra Pradesh. *European Journal of Theoretical and Applied Sciences*, 2: 474-497.

Vidyullatha MV, Jeevan Babu G, Chandrakala BP, Padal Salugu B 2023. Tree barks used for ethnomedicine by primitive tribes of Paderu Division, Alluri Sitarama Raju District, Andhra Pradesh. *World Journal of Biology, Pharmacy and Health Sciences*, 13(03): 33-40.

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