Journal of Global Biosciences
ISSN 2320-1355
Volume 5, Number 2, 2016, pp. 3656-3664
Website: www.mutagens.co.in
E-mail: submit@mutagens.co.in
researchsubmission@hotmail.com

Research Paper

OBSERVATIONS ON PLANT FORMULATIONS FOR PAEDIATRIC USE IN HARYANA, INDIA

Jagmahender Singh[1], Nidhan Singh[2], Satpal[3], Kamal Sharma[1] and Balkar Singh[4]

[1]Botany Department, B.M. University, Rohtak-124021,Haryana.
[2]Botany Department, I.B. (PG) College, Panipat-132103,Haryana
[3]Research & Development Centre,
Bharathiar University, Coimbatore - 641 046, Tamilnadu.
[4]Botany Department, Arya P.G. College, Panipat-132103, Haryana.

Abstract

Plant based medicines are being used by mankind throughout the globe for several thousand years and are similarly popular in rural areas of our country. The present paper deals with ethnobotanical studies related to child care, with emphasis to commonly available herbs invarious parts of Haryana state. Thirty six flowering plant species belonging to thirty families have been studied for their traditional medicinal uses by local people against various ailments of different age groups of children from infants upto 10 years. Some of the significant plants recorded for their medicinal uses include *Azadirachta indica*, *Asparagus racemosus*, *Chenopodium album*, *Ficus benghalensis*, *Lawsonia inermis*, *Terminalia chebula* and *Tinospora cordifolia*.

Key words: *Ethnobotany, Haryana, Medicinal Plants, Traditional Knowledge, Paediatric*.

INTRODUCTION

India is a store house of traditional knowledge related to ethnobotanical uses of plants. Being one of the rich mega biodiversity countries of the world,it harbors avast variety of plants having tremendous medicinal values. During the last two centuries, an increasing trend of using synthetic and other drugs for alleviating health problems has been observed. However, in recent decades, a tremendous increase in interest towards herbal medicines has also been observed asthe drugs obtained from plantsources are believed to be safer. As per the estimate of the World Health Organization (WHO),the traditional medicine obtained from plants is an important contributor towards providing health benefits and covers nearly 80% population of world. In India alone, 65% people of rural areas use traditional medicinal plants to fulfill their primary health care needs.For the development of drugs to cure various human ailments,ethnobotanical information provides useful clues. Over 7500 plant species have been reported to be used in the Indian traditional medicinal systems including ethnomedicines[1].Moreover, the report of the All India Coordinated Project on Ethnobiology reported the use of more than 10,000 wild plant species for medicinal, healthcare, food, and other material requirements of tribal communities in India [2].

Ethnobotanical documentation in India started long back in the form of ancient literature, because plants and their products are considered essential for human survival [3].Very first record of medicinal uses of plants can be found in Rig Veda written between4500-1600 BC and

different writings of Ayurveda,between 2500-600BC [4]. According to the National Medicinal Plants Board, Govt. ofIndia, 6000 to 7000 species are reportedto have medicinal usage in folk and documented systems of medicine like Ayurveda, Unani, Siddha and Homoeopathy[5]. In modern India, the initial systematic studies in the field of medicinal plants were started by [6].Since then, many reports are available about medicinal plants and their uses in traditional healing from different parts of our country.

During 1980s, ethnobotanical studies gained momentum all over the world including India. In Haryana,ethnobotanicalstudies were undertaken comparatively late, in the 21st century only. Initially, much emphasis in such type of studies was on general ethnobotanical surveys. Even today, general ethnobotanical studies are more popular than ailment specific or other kind of specific studies. Besides general ethnobotanicalstudies carried out by many workers [3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19].Afew ailment specific studies have also been carried out in Haryana [18 and 19].

The present work was planned to study and record ethnobotanicalinformation of some medicinal plants specifically used for child health careindifferentparts of Haryana.The main focus of present study wasto record the information on the uses of plants in traditional child health care practices, popular among local peoples in this large geographical area ofHaryana.

MATERIALS AND METHODS

The area under study includes mainly eleven districts of Haryana i.e. Karnal, Kurukshetra, Kaithal, Ambala, Yamunanagar, Panchkula, Panipat, Jind, Rohtak, Jhajjar and Sonipat.Although little information was also reported from Hisar, Fatehabad and Sirsa districts also. The most part of the study area come under hot and semi dry climatic Zone of Haryana. Annual average rainfall is 500-750 mm. The temperature range varies from 45ºC as highest in the months of May and June to 4ºC as lowest in the months of December and January.

Various villages of all these districts under study were surveyed during 2013-2015. Several fieldtrips were undertaken for collecting plants and information during different seasons. The information on plants was collected through oral interviews of the locals, especiallypersons of old age, local medicine men,herbalists,vaidyas etc. Data regarding medicinal uses and local name of plants was recorded alongwithnames,ageand addressof the informants. The information was cross-checked withother informants from neighboringvillages.The plants were identified using standard floras of the region and the latest nomenclature was followed as per various e-resources.

RESULTS

During this study,36(thirty six) different plant species belonging to 30 families were studied for their traditional medicinal uses in various ailments of children of the age group from infantsup to 10 years.Plants enumerated here are reported to be used in many common ailments as well as specific diseases of children. Many of these plants have also been reported to be used for more or less similar and also for other purposes in other parts of Haryana by various authors [3, 4, 9, 11, 13, 16 and 20].Results of the study, resulting from collecting and integrating the information taken by interactions with native people, are being presented in Table 1. For proportion of different plant parts for paediatric usage, see Figure 1.

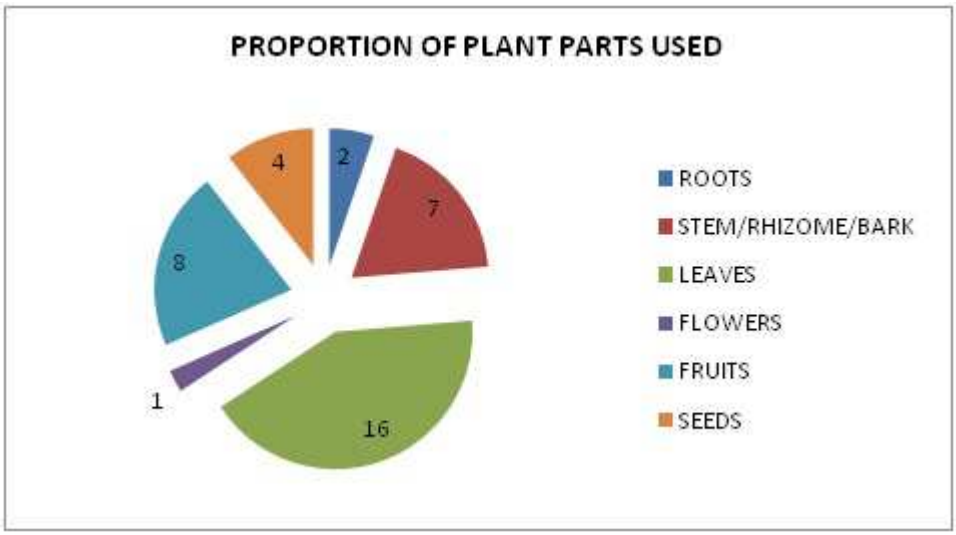

Fig.1. Chart showing proportion of usage of various plant parts as per the present work in the study area.

Table. 1. Plants used in various paediatric formulations.

Sr. No.	Botanical Name & Family	Vernacular Name	Plant Part(s) Used	Paediatric Medicinal Uses
1	*Aeglemarmelos*(L.) Correa (Rutaceae)	*Bel, BelPatthar*	Fruits	A homogenous mixture of fruit pulp andcow milk, in equal proportion, is recommended twice a day. Regular use for one month is said togive complete relief from Epilepsy in children.
2	*Ageratum houstonianum*Mill. (Asteraceae)	*Gandhili, Ajgandha*	Leaves & Flowers	Leaves and flowers are crushed;the extract or juice is applied around the anal region of children to get rid of worms which cause itching.
3	*Allium sativum* L. (Amaryllidaceae)	*Lahsun*	Bulb	4-5 bulbils or "cloves"are fried in mustard oil, grinded and filtered. 1-2 drops of the filtrate are poured in ear to get instant relief from ear pain. The ash obtained from burning bulbils of garlic in an iron pan,when administered with breast milk is used to cure common cold of infants.
4	*Aloe vera* (L.) Burm. f. (Xanthorrhoeaceae)	*GwarPattha*	Leaves	Pulp extracted from fresh leaves and mixed with honey is recommended to be taken daily before going to sleep. At least 20 days of regular use is claimed to improve eye sight. Fresh pulp of leavesis also applied on eyelashes to get relief from some eye problems.
5	*Asparagus racemosus*Willd. (Asparagaceae)	*Shatawari*	Root	Dried roots are grinded to make powder. Half tea spoon of powder mixed with equal amount of *DesiKhand* (locally made sugar),if taken for about 3 months, gives relief from epilepsy.

Sr. No.	Botanical Name & Family	Vernacular Name	Plant Part(s) Used	Paediatric Medicinal Uses
6	*Azadirachtaindica*A. Juss. (Meliaceae)	*Neem*	Leaves	Decoction of tender leaves of *Neem* and stem of *Giloy* (*Tinosporacordifolia*) is prepared and filtered. Filtrate mixed with honey is given twice a day for 4-5 days, and is effective remedy against malaria.
7	*Blumealacera* (Burm.f.) DC. (Asteraceae)	*Kukurbhangra*	Leaves	Extract of leaves is applied to anal region for getting relief from worms.
8	*Brassica rapa*subsp. *campestris* (L.) Clapham (Brassicaceae)	*Sarson*	Seeds	Oil obtained from seeds is boiled with seeds of Methi and garlic. This oil is used for body massage of children. This protects the skin from rashes and also gives relief from common cold.
9	*Calotropisprocera* (Aiton) Dryand. (Apocynaceae)	*Aak, Madar*	Root	Grind the fresh roots in water, and filter this mixture. A tea spoon of filtrate mixed with small amount of Jaggery (*Gur*) if administered before sleeping for at least 3 days, provides relief from intestinal worms.
10	*Chenopodium album* L. (Amaranthaceae)	*Bathua*	Leaves	One tea spoon of decoction of leaves,when given on empty stomach for 3-4 days on regular basis to the children,provides relief from stomach pain, if it is due to worms.
11	*Cordia dichotoma* G.Forst. (Boraginaceae)	*Lasura*	Leaves	Ash of leaves mixed with honey given to children with milk to cure cough.
12	*Cuscutareflexa*Roxb. (Convolvulaceae)	*Amar Bel, AakashBel*	Shoot	Extract of stem is useful in intestinal worms and a poultice of the same can be applied when there is itching/rashes on the skin.
13	*Daturametel*L. (Solanaceae)	*Dhatura*	Seeds	A minute quantity of *Datura* seed oil, mixed with mustard oil is heated slowly for 10 minutes. 1-2 drops of this mixture are poured in ears, 2-3 timesa day to get relief from ear ache.
14	*Eclipta alba* (L.) Hassk. (Asteraceae)	*Bhringraj*	Leaves	The leaf juice boiled with sesame oil, coconut oil and Amla oil is an effective hair tonic, keeps the hair black and shining. When mixed with Brahmi, and massaged on scalp, is said to improve memory of the kids.
15	*Euphorbia prostrata*Aiton. (Euphorbiaceae)	*Dudhi*	Leaves	In case of insect bite, especially of yellow wasp, the juice obtained from crushing the leaves is rubbed over the area affected by insect bite to get relief.

Sr. No.	Botanical Name & Family	Vernacular Name	Plant Part(s) Used	Paediatric Medicinal Uses
16	*Ferula assa-foetida* L. (Apiaceae)	*Hing*	Rhizome	Powder of the resin obtained from rhizomes (available as *Hing*) is applied on the belly of children to give relief from flatulence.
17	*Ficusbenghalensis* L. (Moraceae)	*Vat, Bargad*	Leaves, Fruits	Latex extracted from leaves is warmed slightly. After cooling, one drop twice a day is poured in ears for 3-4 days, to get relief from earache.
18	*Lawsoniainermis* L. (Lythraceae)	*Mehndi*	Leaves	Decoction of leaves mixed with little amount of sugar is given thrice a day for 4-5 days, and this is believed to give relief from jaundice.
19	*Mimusopselengi*L. (Sapotaceae)	*Maulsari*	Seeds	Small quantity of dried seed powder is applied in anal region of child to get relief from constipation.
20	*Ocimumtenuiflorum*L. (Lamiaceae)	*Tulsi*	Leaves	Take extract of 20-25 fresh leaves, mix it with 10 spoons of honey.Store the mixture in a clean bottle. Half spoon of this mixture is taken thrice a day for 3-4 days to cure common cold, cough and viral fever.
21	*Oxalis corniculata* L.(Oxalidaceae)	*Khattibuti*	Leaves	2-3 drops of leaf juice when poured in ear, is claimed to cure unequal size of testes of baby boys. Leaf juice is also given in prolapse of the rectum in children.
22	*Mangiferaindica* L. (Anacardiaceae)	*Aam, Mango*	Fruits	Powder of tender fruits is given with breast milk to cure dysentery in infants.
23	*Phyllanthus emblica* L. (Phyllanthaceae)	*Amla*	Fruits	Remove pulp from boiled fresh fruit. Mix equal amount of honey in crushed pulp to make a paste. Half tea spoon of paste, taken thrice a day gives relief from dysentery.
24	*Phyllanthusreticulatus* Poir.(Phyllanthaceae)	*BhuiAmla*	Fruits	Fruit juice used to cure diarrhoea in children.
25	*Piper longum*L. (Piperaceae)	*Pippali*	Fruits	The fruit is boiled with milk. This mixture is very useful for curing digestive system problems of the children.
26	*Plumbagozeylanica*L. (Plumbaginaceae)	*Chitrak*	Leaves	Leaf extract mixed with coconut oil and a pinch of camphor is applied on skin at night before sleeping, to get relief from skin problems especially itching.

Sr. No.	Botanical Name & Family	Vernacular Name	Plant Part(s) Used	Paediatric Medicinal Uses
27	*Raphanusraphanistrum* subsp. *sativus* (L.) Domin. (Brassicaceae)	*Muli*	Leaves	Fresh leaves are grinded, extract filtered through cotton cloth. This filtrateis stored after adding little amount of *Khand* (locally made sugar) in it. One tea spoon of this mixture, if given thrice a day for one week,gives relief from jaundice.
28	*Ricinuscommunis* L. (Euphorbiaceae)	*Arand*	Seeds	Seed oil of *Arand* is mixed with seed oil of *Dhatura* in equal amount and heated slowly for 10 minutes.1-2 drops of this mixture oil is poured in ears 2-3 timesa day, to get relief in ear ache.
29	*Syzygium cumini* (L.) Skeels (Myrtaceae)	*Jamun*	Bark	Fresh juice of bark with goat milk given to children in dysentery and loss of appetite.
30	*Terminaliaarjuna* (Roxb. ex DC.)Wight &Arn. (Combretaceae)	*Arjun*	Bark	Dried bark of this tree is crushed to make powder.When mixed with papaya fruit pulp and given twice a day, upto a week,gives relief from jaundice.
31	*Terminaliachebula* Retz. (Combretaceae)	*Harad*	Fruits	Fruit paste is prepared by crushing itin water. 2-3 drops of this paste, mixed with lukewarm water can be given to children to get relief form flatulence/constipation. If the same is administered with cold water,this is said to provide relief from diarrhoea.
32	*Tinosporacordifolia* (Willd.) Hook. f. & Thomson(Menispermaceae)	*Giloy*	Stem	Stem is sun dried for a week,then grinded to make powder. Half tea spoon of this powder is recommended to be taken with cow milk twice a day for 3-4 days. This is effective for recovery from many types of fever, particularly viral fever. Decoction of stem cam also begiven in case of fever.
33	*Trachyspermummami* (L.) Sprague *ex*Turrill(Apiaceae)	*Ajwain*	Fruits	Decoction of *Ajwain*mixed with little salt is a wonderful formula for curing gas, flatulence and indigestion. A tablespoon of decoction of *Ajwain*, mint and sugar is very effective to cure stomach pain of children, resulting from indigestion.
34	*Vitexnegundo*L. (Verbenaceae)	*Nirgundi*	Leaves	Leaf extract mixed with coconut oil and a pinch of camphor is gentlyapplied on affected parts of skin of the children, preferably when going to sleep, to get relief from skin problems.

Sr. No.	Botanical Name & Family	Vernacular Name	Plant Part(s) Used	Paediatric Medicinal Uses
35	*Zingiberofficinale* Roscoe (Zingiberaceae)	*Adrak, Sunthi*	Rhizome (Fresh & Dried)	Ginger juice when taken with honey, relieves the congested cough, and cure throat irritation. It is digestive when mixed with a pinch of salt. *Sunthi* made to powder is heated by mixing with Jaggery (*gud)*, this is very effective remedy for cold and flu.
36	*Ziziphusjujuba* Mill. (Rhamnaceae)	*Ber*	Bark	Decoction of dried bark (1:4 parts of water) is prepared and filtered. One tea spoon filtrate mixed with one spoon of honey is given thrice a day for 2-3 days, for recovery from common cold and cough.

DISCUSSION

Traditional knowledge of ethnomedicinal plants is a precious intellectual property of ourancestors, which accumulated through experiments and observations made by them since ages. This is undoubtedly playing a crucial role in health care systems in many countries worldwide. In Africa, 85% population is still dependent on use of alternative drugs [21]. Globally,the use of herbal formulations isgaining momentum due to their efficacy, minimum side effects andsafety of use. In India, efforts are being made in this direction by academicians, researchers, government and also by many citizen scientist e-groups. All India Coordinated Project on Ethnobiology is an example of a commendable effort in this regard. However, some states like Haryana, Punjab and Uttar Pradesh are not being properly represented, thusare lagging behind in such documentation work of traditional knowledge as compared to other states in India, due to many reasons.

Haryana is one of the most developed states in our country in terms of economy, agriculture and industrialization. However, industrialization and intensive agriculturehaveresulted in depletion offorest cover of unprotected areas, and to a good extent of protected areas also.As a consequence, areas of undisturbed biodiversity are very limited, which has resulted in limited knowledge ontraditional uses of plants. Further, the absence of any ethnic tribes also made the state ofHaryana poor in traditional knowledge of medicinal plants. Despite the above facts, praiseworthy data has been accumulated from Haryana by many workers, related to traditional ethnomedicinal uses of plants. The popular use of herbal remedies among the local people in different villages of studyarea reflects the interest of people in traditional medicines. Documentation of such an important traditional knowledge is necessary because old-agedpersons are the chiefcustodians of such information. This knowledge is diminishing day-by-day as the new generation is least concerned in learning these age old customs and precious information.A proper documentation of this knowledge is essential and this documentation will be very useful for the generations to come and to undertake more studies for record this priceless heritage is the need of the hour. In this context, ailment specific or other specific studiesare required alongwith general studies,to document traditional ethnomedicinal information. Studies in different parts of country on specific aspects like ethnopaediatric-medicinal plants [22 and 23], plants used in skin disorders [19], plants used in diabetes[5] and those used in liver problems[24]are example of these specific studies. Our present study is also an effort on thesame line, and presents the recorded information on ethnomedicinal uses of plant species for paediatricpurposes.

ACKNOWLEDGEMENT
Corresponding author thanks University Grants Commission, New Delhi for support in the form of Minor Research Project. We are thankful to Principal, Arya PG College, Panipat for providing necessary facilities to carry out this work.

REFERENCES

[1] Gautam, R., Saklani, A. andJachak, S.M. 2007. Indian medicinal plants as a source of antimycobacterial agents, Journal ofEthnopharmacology,110: 200-234.
[2] Anonymous (1992-1998). Final Technical Report, All India Coordinated Project on Ethno biology, Ministry of Environment and Forests, Govt. of India.
[3] Panghal, M., Arya, V., Yadav, S., Kumar, S., andYadav, J.P. 2010: Indigenous knowledge of medicinal plants used by Sapera community of Khetawas, Jhajjar District, Haryana, India, Journalof Ethnobiologyand Ethnomedicine, 6 (4):1-11.
[4] ParulandVashistha B.D. 2015. An Ethnobotanical Study of Plants of Yamuna Nagar District, Haryana, India,InternationalJournal of Innovative Research in Science Engineering and Technology, 4 (1): 18600-18607.
[5] Swargiary, A., Boro, H., Brahma, B.K. andRahman. S. 2013. Ethno-botanical study of anti-diabetic medicinal plants used by the local people of Kokrajhar district of Bodoland Territorial Council, India,Journal of Medicinal Plants, 1 (5): 51-58.
[6] Kirtikar K.R. andBasu B.D. 1935: *Indian Medicinal Plants* Vol. 3. Lalit Mohan Publication, Allahabad.
[7] Jain, S.P. 1984. Ethnobotany of Morni and Kalesar, DistrictAmbala, Haryana,Journal of Economic& Taxonomic Botany, 5: 809- 813.
[8] Jain, S.P. andVerma, D.M. 1987. Medicinal plants in the folklore of Northeast Haryana,National Academy of Science Newsletters, 4 (7): 263-270.
[9] Lal S.D. andYadav B.K. 1983: Folk Medicine of Kurukshetra District (Haryana), India,Economic Botany, 37: 299-305.
[10] Sharma, M., Ahmad, J., Hussain, A., and Khan, S. 1992. Folklore medicinal plants of Mewat (Gurgaon district), Haryana, India,Pharmaceutical Biology, 30: 129-34.
[11] Yadav, S., Yadav, J.P., Arya, V. andPanghal, M. 2010: Sacred grooves in conservation of plant biodiversity in Mahendergarh District of Haryana,Indian Journal of Traditional Knowledge, 9 (4): 693-700.
[12] Yadav, S. S. and Bhandoria,M. S. (2013). Ethnobotanical Exploration in Mahendergarh District of Haryana (India), Journal of Medicinal Plant Research, 7(18): 1263-271.
[13] Kaur, R. andVashistha B.D. 2014. Ethnobotanical Studies on Karnal District, Haryana, India,International Research Journal of Biological Sciences, 3(8): 46-55.
[14] Singh, B. and Singh, J. 2014. Ethnobotanical uses of some plants from central Haryana, India,Phytodiversity, 1 (1&2): 7-24
[15] Yadav, S.S., Bhukal, R.K., Bhandoria, M.S., Ganie, S.A., Gulia, S.K. andRaghav, T.B.S. 2014. Ethnoveterinary Medicinal plants of Tosham block of district Bhiwani (Haryana) India. Journal of Applied Pharmaceutical Sciences, 4 (6): 040-048.
[16] Singh, A., Tak, H.S., Singh, L., Kumar, A. and Kumar, S. 2015. Ethnobotanical survey of common medicinal plants in Bhiwani, Haryana, India,World Journal ofPharmaceutical Sciences,3 (3): 492-499.
[17] Singh, N. and Vashistha, B.D. 2014. Flowering plant diversity and Ethnobotany of Morni Hills, Siwalik Range, Haryana, India,International Journal of Pharmaceutical and Biological Sciences, 5 (2): (B) 214-222.
[18] Yadav, J., Kumar, S. andSiwach, P. 2006. Folk medicine used in gynaecological and other related problems by rural population of Haryana. Indian Journal of Traditional Knowledge, 5: 323-326.
[19] Yadav, S., Arya, V., Kumar, S. andYadav, J. 2009. Plants of Haryana useful in dermatological disorders: An Ethnobotanical Survey,**Pharmacognosy Reviews**, 3 (5): 104-107.

[20] Vashistha, B.D. andKaur, M. 2013. Floristic and ethno botanical survey of Ambala district Haryana,International Journal of Pharmaceutical and Biological Sciences,4 (2): 353-360.

[21] Kofi-Tsekpo, M. 2004. Institutionalization of African traditional medicine in health care systems in Africa,African Journal of Health Sciences, 11(1-2): i-ii.

[22] Sammaiah D., Chandraiah G., Anitha Devi, U., Kanaka Rajesham C., and Ugandhar T. 2013. Progress and prospects of medicinal plants of Ethnopediatric importance in Mahadevapur Reserve Forest of Karimnagar East Division of (A.P.) India. Biosciences Discovery, 4(2): 173-175.

[23] Pandey, N. and Joshi, A. 2015. Paediatric Ethnobotany of The Boxa Tribe of Tarai and Bhabar Region of Uttarakhand, India, International Journal of Scientific Research, 4(4): 24-26.

[24] Alagesaboopathi, C. 2015. Medicinal plants used for the treatment of liver diseases by Malayali tribes in Shevaroy hills, Salem district, Tamilnadu, India, *World* Journal of *Pharmaceutical Research*, 4 (4): 816-828.