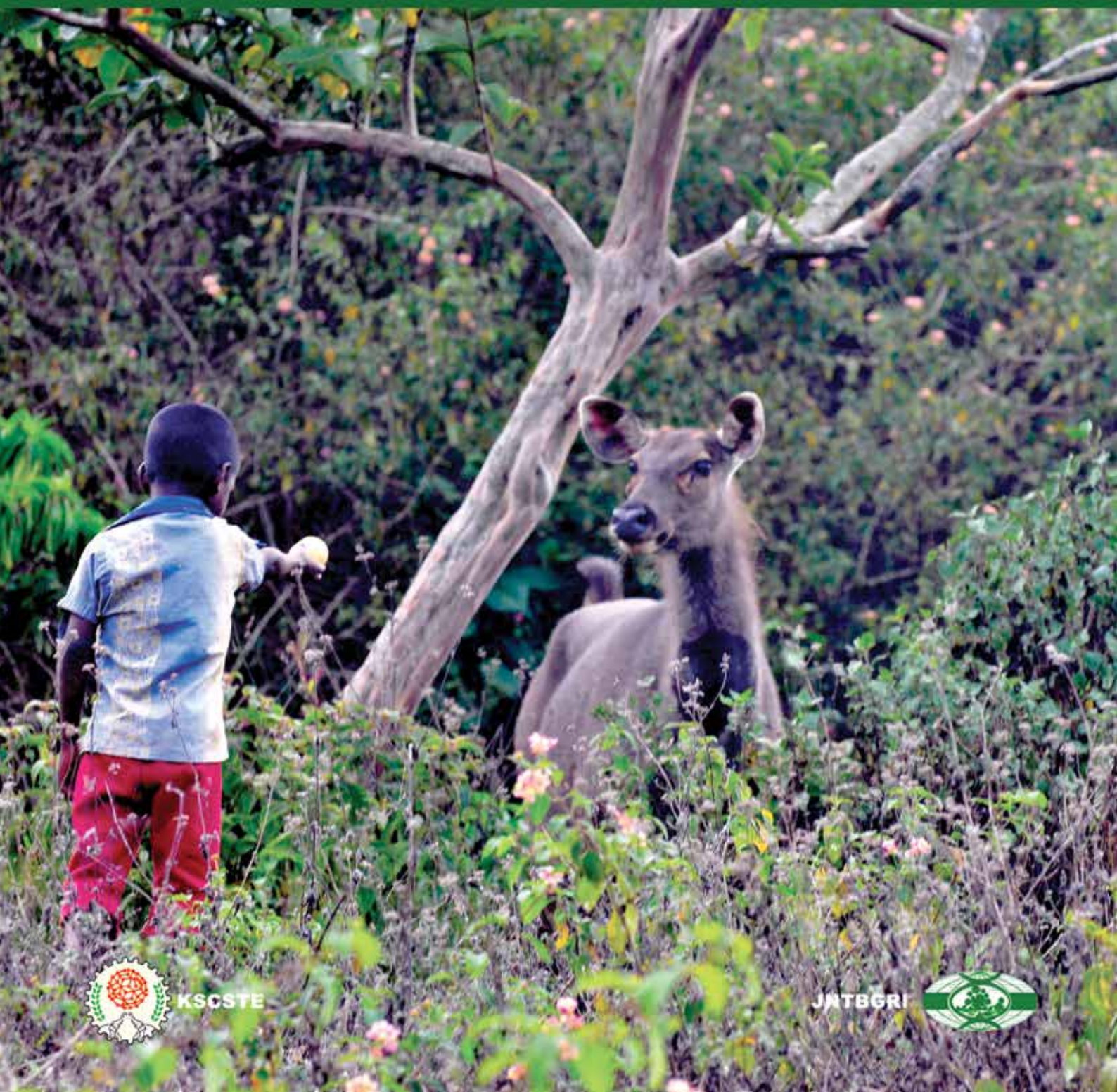
Volume 06 | Number 02 | December 2018

ISSN 2278 - 5906

JOURNAL OF TRADITIONAL AND FOLK PRACTICES



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JNTBGRI

Volume 06 Number 2 December 2018 ISSN 2278 - 5906

JOURNAL OF TRADITIONAL AND FOLK PRACTICES

JTFP online : http://www.jtfp.jntbgri.res.in

KSCSTE JNTBGRI

Volume 06 (2) December 2018, 78-83
ISSN 2278 - 5906
https://doi.org/10.25173/jtfp.2018.6.2.108
http:/www.jtfp.jntbgri.res.in

Journal of Traditional and Folk Practices

Ethnomedicine for Asthma by the tribes of Visakhapatnam district, Andhra Pradesh

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Received: 05 Feb 2018 Accepted: 08 May 2018

Abstract

Absence of exclusive studies on Asthma by the tribes paved the way to undertake the present study. It deals with 19 species of pants covering 18 genera and 16 families used by the tribes of Visakhapatnam district, Andhra Pradesh, for its cure. Rutaceae, Asclepiadaceae, Acanthaceae and Euphorbiaceae are the dominant families with 2 species each followed by others. Habit-wise analysis showed the dominance of trees with 7 species followed by herbs (5 spp), shrubs (4 spp) and others. Leaf is used in a maximum of 7 practices followed by others. Nine practices were found to be new. A chemical analysis of the promising plants is undertaken.

Keywords: Morphological analysis, Bioactive compounds, New drugs, Pharmacological investigation

1. Introduction

Asthma is defined as a common, chronic respiratory condition that causes difficulty in breathing due to inflammation of the airways. Asthma symptoms include dry cough, wheezing, chest tightness and shortness of breath. Visakhapatnam district is situated in the north eastern part of Andhra Pradesh. It lies between 17 -34' 11" and 18 – 32' 57" northern latitude and 18 -51' 49" and 83 -16' 9" eastern longitude covering 6, 298 sq km i.e., 56.4% of the total geographical area of the district. As per 2011 census, its population is 4,290,589 of which the tribes include 618,500 comprising 14.42 percent of the total population. The district occupies the first position in tribal population. The predominant tribes (11) of the district are *Bagata, Gadaba, Goudu, Khond, Konda dora, Konda kammara, Kotia, Mali, Mukha dora, Porja* and *Valmiki.* Though there are publications on Asthma in different parts of India (Jadhav, 2012; Manjula *et al*., 2013; Suneetha *et al*., 2013; Naidu & Reddi, 2016) exclusive studies on the tribes of Visakhapatnam district are not observed resulting the present study.

2. Materials and Methods

The ethnomedicinal data presented here are the outcome of a series of intensive field studies conducted during 2005-2007 in 88 representative interior tribal pockets with good forest cover. A total of 60 *vaidyas* above 50 years of age involving 8 tribal communities were used in collecting the ethnomedicinal data. The field trips were planned in such a way so as to cover all the seasons of a year. Each field trip was of 7-12 days duration covering 4-5 pockets in a day. Initial study trips were utilized to know more about the land and people and collect plants for taxonomic identification.

After establishing a good rapport with the tribes, the utility of plants, detailed methods of uses were documented. Data collected were cross-checked with the data obtained from same as well as on different settlements on different occasions for authenticity. The plants were identified using the Flora of the Presidency of Madras (Gamble, 1915-1935) and the Flora of Visakhapatnam, Andhra Pradesh (Rao and Kumari, 2008). Voucher specimens were deposited in the Herbarium of the Department of Botany (BDH), Andhra University, Visakhapatnam.

3. Results and Discussion

3.1 Ethnology of the tribes

3.1.1. Bagata: The term Bagata is originated from Bhakti as they served their rulers with great devotion. This word might have been derived from the local word "Bugata" which means landlord. But their origin is not known. Most of the former Muttadars and traditional village headman belong to this tribe. These headmen acted as intermediary landlords and they used to collect revenue from cultivators and paid fixed sums either to former Zamindars or British administrators in India. Bagatas occupy highest social status in local social hierarchy.

The social approved modes of acquiring mates include marriage by negotiations, mutual love, elopement, capture and service. Monogamy is generally the rule and polygamy is also rarely found. Widow remarriage is permitted while divorce is also permissible on payment of *Maganali* or compensation to the family. Patriarchal, matrilineal and patrilocal families are generally found. Nuclear type of families is prevalent while joint families are rarely found. The dead are either buried or cremated depending on the economic condition of the family. Bagatas are generally settled cultivators even though landless people resort to shifting cultivation. They have traditional councils at village level to settle the disputes not only of Bagatas but also other tribes of the village. They worship several gods and goddesses such as Sanku Devata, Jakara Devata, Nandi Devata, Bali Devata, Durga, etc. They celebrate all festivals along with other tribal communities. The important festivals are Chaitra parbo or Etukula panduga, Mamidikotha, Chikudukotha and Korrakotha.

3.1.2. Gadaba: Gadabas derived their community name either from river Godavari or from "Goda", an Oriya word meaning brook. Gadabas in Visakhapatnam district call themselves 'Gitadim' in their own parlance. Gadabas are of two linguistic groups, those who speak Gadaba belonging to the Dravidian family and those who speak "Gutob" belong to Austro-Asiatic family of languages.

3.1.3. Khond: Khond is one of the primitive tribal groups inhabiting mountain and forest tracts. The Khonds call themselves in their own dialect as Kuinga or Kui Dora. The origin of Khonds evokes much controversy and the name is probably derived from the Telugu word "Konda" means Hill. They claim themselves to be descendants of Janaka, a mythological king of Ramayana.

Monogamy is the rule. Polygamy is rare but polyandry is unknown. Both levirate and junior sororate are in existence. Marriage by exchange, elopement and service or socially approved ways of acquiring mates. The consumption of beef and pork is not traditionally forbidden. They have their own dialect called Kui or Kuvi. The Khonds have a tribal council usually consisting of four or five members headed by a man called Havanta, whose office is hereditary. The members of the council are selected. The main functions of the council are settlement of disputes on marriage, land and other property. They are experts in *podu* cultivation. They adopt hunting and fishing also. They are well versed in handicrafts like baskets and mat weaving, oil extraction etc. The habitual behaviour of aged women from Khonds having comb in hair. The Khonds are recognised as Primitive Tribal Group.

3.1.4. Konda Dora: They believe that they are the descendants of the Pandavas of Mahabharata and call themselves as Pandava Rajas or Pandava Doras. They call themselves as Kubing or Kondargi in their own dialect. Their language is Konda, which belongs to the Dravidian family of languages. Most of them have forgotten their dialect and have adopted Telugu as their mother tongue. They speak Adivasi Oriya and Telugu.

Levirate type of marriage is customarily practiced. Polygamy is also in vogue. Marriage by capture, elopement, negotiations and service are traditionally

accepted ways of acquiring mates. Divorce is socially permitted. They eat beef and pork. They are basically shifting cultivators. But they are adapting to settled cultivation because of restriction imposed due to conservation. They collect and sell minor forest produce. They are experts in hunting. They worship Boda Devatha, Sanku Devatha, Nisani Devatha and Jakara Devatha and offer sacrifices. They celebrate Chaitra panduga, Balli panduga, Korra and Sama. The most important festival is Kada Pandoi (Seed charming festival) and this festival is followed by hunting festival.

3.1.5. Kotia: They claim themselves to be descendants of Janaka, a mythological king of Ramayana. They are divided into a number of clans. They speak the Kuvi or corrupt form of Oriya language at home, while Telugu is used for inter-group communication. Four types of acquiring mates are in vogue in this community. They are marriage by negotiation, mutual love, elopement, capture and service. Both levirate and sororate are socially accepted. Traditionally mechanism of social control among Kotias is called Nayaklok and it is headed by a traditional leader called Nayak. The messenger is called Barika. They settle disputes like elopement, adultery, theft, divorce, land disputes, quarrels etc. The principal deities worshipped by Kotias are Pedda Demudu, Sanku Demudu, Nandi Demudu, Jakari Demudu and Ganga Devatha. They celebrate festivals like Puspurab, Soyuthpurab, Nandipurab, Ashadajatara, Gairampanduga, Peda Demudu panduga, Bhema Devudu panduga and first new crop eating festivals like Korra, Sama kotha, Mettadanyamkotha, Mamidikotha etc.

3.1.6. Mukha Dora: The Mukha Doras claim themselves as descendants of Lord Krishna of Mahabharata. Marriage by capture, service, elopement and negotiations are the socially accepted ways of acquiring mates. Polygamous marriages are also common. Levirate and sororate types of marriages are also permitted. Their mother tongue is Telugu but they also speak Adivasi Oriya. They abstain from eating beef and pork. They worship Bodo Devatha, Jakara Devatha. Sanku Devatha, Nisan Devatha and Ganga Devatha like other tribal communities in the village. Most significant festival is Chaitra festival. Most of them settled in agriculture and supplement their economy by the collection and sale of minor forest produce. They claim social status just below the Bagatas in social hierarchy in tribal areas of district.

3.1.7. Porja: They are also called as Pengu, Gadaba, Parengi, Didoi, Kollai, Bonda and Jhodia Porjas and the term is merely a corruption of the Sanskrit term *Praja* which means People. Porja also could have been derived from Oriya language, meaning Sons of Raja. Most of the Porjas speak their own dialect. The Porjas largely subsist by shifting cultivation. The Porjas are recognised as primitive tribal group and poverty alleviation programmes are being implemented.

3.1.8. Valmiki: They are also called as Pydis and they claim to be the descendants of great saint Valmiki, the author of Ramayana. Marriage by mutual consent, elopement, widow marriages and divorce are permissible. These are agriculturists and forest labourers. Some of them became traders and petty money lenders. Valmiki women are involved in preparing mango jelly. They sell the earthen pots also in the shandies. They practise *podu* cultivation on the slopes of hills. Most of the tribes speak Telugu except those in areas close to Orissa state who speak Oriya. Few tribal groups speak their own tribal dialect to which there is no script. The language among the tribes is traditionally passed on without a written document. On the basis of the structure of language the tribal dialects have been divided into Dravidian and Austric groups.

3.2. Enumeration

The plants are arranged in alphabetical order with botanical name followed by family, vernacular name, English name, part(s) used, method, mode and duration of treatment and tribe collected. Less known or new practices are marked with an asterisk (*).

Adenanthera pavonina L. Mimosaceae VN: Bandigurvinda E: Coral wood tree, Sindhputt, 3515, Root bark

Root bark with seeds of *Withania somnifera* and tuberous roots of *Asparagus racemosus* taken in equal quantities are ground. 2 spoonful of paste mixed with a spoonful of honey is administered daily twice in the morning and evening for 5 days *(Gadaba).*

Aegle marmelos (L.) Correa Rutaceae VN: Meredu E: The bael tree, Sapparla, 3738, Leaf

Handful of leaves is powdered and mixed along with ½ spoon of honey and is administered twice in the

morning and evening for 15 days *(Bagata).*

Bacopa monnieri Wettst. Srophulariaceae VN: Sambrani Mokka E: Thyme, Padmapuram, 4427, Leaf

*Half spoon of decoction of leaf is administered daily twice in the morning and evening for one week to children *(Khond).*

Barleria prionitis L. Acanthaceae VN: Mullagorinta E: Thronnail dye, Bedda guda, 4254, Leaf

*A spoonful of leaf juice with powder of 3 seeds of *Piper nigrum* mixed in a glass of hot milk is administered daily once in the morning for one week *(Valmiki).*

Calotropis gigantea (L.) Dryand. Asclepiadaceae VN: Nalla jilledu E: Madar, Mampa, 2706, Leaf

Castor oil is applied on the leaves and burnt on the flame. The patient inhales the smoke in the morning to cure asthma *(Gadaba).*

Citrus medica L. Rutaceae VN: Dabba E: Lemon, Madagada, 2927, Fruit

*2 spoonful of fruit juice and a spoonful of honey ground with 10 g of sugar candy are administered with a glass of water once a day in the morning for 4 days *(Khond).*

Datura innoxia Mill. Solanaceae VN: Ummedha E: Downy thorn apple, Dharakonda, 3935 , Root

100 g of root is ground along with a pinch of salt and made into pills of red gram seed size. 2 pills are administered with a glass of water once in the morning for a week *(Valmiki).*

Evolvulus alsinoides L. Convolvulaceae VN: Neelam puvvu E: Dwarf morning glory, Padabayalu, 3835, Leaf

2 spoonful of leaf paste mixed in a glass of hot water is administered before breakfast for 21 days *(Porja).*

Justicia adhatoda L. Acanthaceae VN: Adda saram E: Malabar nut tree, Attaguda, 3638, Leaf

Half spoon of shade dried leaf powder mixed with a spoonful of honey is administered before breakfast for 45 days (*Porja).*

Madhuca longifolia (Koen.) Mac Br. Sapotaceae VN: Ippa E: South Indian mahua tree, Devarapalli, 2579, Flower

3 spoonful of decoction of flowers is administered daily twice in the morning and evening for 15 days *(Konda dora).*

Passiflora foetida L. Passifloraceae VN: Aguspeda E: Stinking passion flower, Chinamodhugaputt, 3087, Root

Roots with those of *Curculigo orchioides* taken in equal quantities are ground. A spoonful of paste with a glass of hot water is administered once a day in the morning for a week *(Khond).*

Phyllanthus amarus Schum. & Thonn. Euphorbiaceae VN: Nelasirli E: Phyllanthus, Araku Valley, 4187, Whole plant

*20 g of whole plant paste is taken with sugar once a day in the morning for one week *(Gadaba).*

Phyllanthus emblica L. Euphorbiaceae VN: Pedha usiri E: Gooseberry, Sunkarimetta, 3099, Seed

2 spoonful of seed decoction is administered once a day in the evening for 30 days. *(Konda dora)*

Piper nigrum L. Piperaceae VN: Miriyalu E: Black pepper, Chintapalli, 4495, Dried berry

*100 ml of decoction of seeds (10 g) is administered before breakfast for 10 days *(Kotia).*

Selaginella repanda (Desv. ex Poir.) Spr. Selaginellaceae VN: Odamara, E: Spike moss, Beddaguda, 3987, Whole plant

*Whole plant with roots of *Passiflora foetida* and *Curculigo orchioides* taken in equal quantities are ground. 2 spoonful of this paste is administered twice a day in the morning and evening for 3 days *(Mukha dora).*

Setaria italica (L.) Beauv. Poaceae VN: Korralu E: Italian millet, D. Gonduru, 4003, Seed

*100 g of seeds with 3 tender leaves of *Thysanolaena maxima* are boiled in water and made into decoction. A spoonful of decoction is administered daily twice in the morning and evening for 21 days *(Kotia).*

Terminalia chebula Retz. Combretaceae VN: Karakkai E: Black myrobalan, Ganjigedda, 2787, Fruit

*10 g of young fruit paste is administered once a day in the morning for 15 days *(Gadaba).*

Trema orientalis (L.) Blume Ulmaceae VN: Bokkedu manu E: Indian nettle, Sapparla, 2879, Leaf

*7 tender leaves with 3 tender leaves of *Thysanolaena maxima* and 10 g of *Setaria italica* seeds are boiled

in water and made into decoction. Half glass of decoction is administered daily twice in the morning and evening for a week (*Bagata).*

Tylophora indica (Burm. f.) Merr. Asclepiadaceae VN: Asthma theega E: Emetic swallow wort, Chinamodhugaputt, 3983, Root

A spoonful of dry root powder mixed in a glass of raw milk is administered once a day in the morning for 10 days *(Khond).*

A total of 19 plant species belonging to 16 families were recorded after conducting survey for curing asthma by the tribes of Visakhapatnam district, Andhra Pradesh. Rutaceae, Asclepiadaceae, Acanthaceae and Euphorbiaceae recorded the highest number of species (2 spp each) followed by others with one species each. Among the total plant species, trees are in highest in number 7 (36.84%) followed by herbs 5 (26.31%), shrubs 4 (21.05%) and climbers 3 (15.78%). Morphological analysis showed the maximum utilization of leaf in 7 (36.84%) practices followed by root and seed 3 each (15.78%), whole plant and fruit 2 each (10.52%) and root bark and flower in one (5.26%) practice each. They are administered either in the form of powder, paste, decoction or extract along with either water, milk, honey, sugar or salt. 9 practices were found to be new or less known (Jain, 1991, Kirtikar and Basu, 2003). Plants used for similar purpose elsewhere are *Barleria prionitis, Passiflora foetida, Phyllanthus emblica, Tylophora indica* by the *Yanadi, Nakkala, Irula, Yerukala, Sugali/Lambadi* and *Chenchu* tribes of Chittoor district, Andhra Pradesh (Vedavathy *et al*., 1997); *Tylophora indica* by the non-tribal and *Koraga, Malekudiya, Halakki vokkaliga, Siddi* and *Gowli* tribes of Dakshina Kannada and Uttara Kannada coastal districts of Karnataka (Bhandary and Chandrashekar, 2002); *Aegle marmelos* by the herbal healers of Pondicherry (Nadanakunjidam and Abirami, 2005); *Evolvulus alsinoides* by the people of Gonda district, Uttar Pradesh (Upadhyay and Singh, 2005); *Terminalia chebula* by the local people of 11 districts of Karnataka (Shiddamallayya *et al*., 2010); *Calotropis gigantea* by *Bhil* tribe of Ratlam district, Madhya Pradesh (Jadhav, 2012); *Justicia adhatoda, Tylophora indica* by the *Kondh, Gond, Saura, Mirdha, Munda, Kharia, Kora, Kolha* tribes of Boudh district of Odisha (Sahu *et al*., 2013); *Aegle marmelos, Barleria prionitis, Passiflora foetida* by *Koya, Gond, Lambada, Konda reddi* tribes of Khammam district, Andhra Pradesh (Manjula *et al*., 2013); *Adenanthera pavonina, Calotropis gigantea, Evolvulus alsinoides, Justicia adhatoda, Tylophora indica* by the *Konda reddi, Konda dora, Konda kammara, Konda kapu, Koya dora, Manne dora* and *Valmiki* tribes of East Godavari district, Andhra Pradesh (Suneetha *et al*., 2013); *Bacopa monnieri* by the *Santhal, Oraon, Munda* tribes of Dakshin Dinajpur district, West Bengal (Talukdar and Talukdar, 2013), *Chenchu, Sugali* tribes of Nallamalais, Andhra Pradesh (Saheb, 2014) ; *Phyllanthus emblica* in Thiruvananthapuram district, Kerala (Arya *et al*., 2015); *Bacopa monnieri, Boerhavia diffusa* by the tribes in Kumaun, Uttarakhand (Mathur and Joshi, 2016), and *Bacopa monnieri, Justicia adhatoda, Phyllanthus emblica, Tylophora indica* by the *Savara, Jatapu, Koda dora, Gadaba, Kuttiya, Yerukala* tribes of Srikakulam district, Andhra Pradesh (Naidu and Reddi, 2016).

4. Conclusion

The herbal recipes recorded in the present study may provide the basis for further scientific investigation on the medicinal plants used by the tribes of Visakhapatnam district, Andhra Pradesh. This may lead to the discovery of new bioactive compounds with therapeutic potential for the development of new drugs and drug intermediates. Hence, a detailed chemical and pharmacological investigations are necessary to verify the ethnomedicinal claims of these promising plants.

Acknowledgements

The authors are grateful to the tribes of Visakhapatnam district, Andhra Pradesh, for their cooperation during field work and sharing their valuable knowledge on asthma. MHB is grateful to the University Grants Commission (UGC), New Delhi, for the award of fellowship under Faculty Improvement Programme (FIP).

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