

Ethnomedicinal plants for curing rheumatoid arthritis by the Bagata tribe of Andhra Pradesh

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Abstract

The paper deals with 58 species of plants covering 55 genera and 34 families used by the Bagata tribe of Andhra Pradesh for curing rheumatoid arthritis. Fabaceae is the dominant family with 10 species followed by Cucurbitaceae, Lamiaceae (3 spp. each), and others. Trees are represented by 20 species, followed by herbs (17 spp.) and others. Leaf is used in 18 practices followed by root and stem bark (11 each), and others. *Plumbago auriculata* and 25 practices were found to be new.

Key Words: Ethnomedicine; Rheumatism; Bagata tribe; Andhra Pradesh

Introduction

Visakhapatnam district is situated in the north eastern part of Andhra Pradesh. It lies between 17°34'11" and 18°32'57" N latitudes and 81°51'49" and 83°16'9" E longitudes covering 6, 298 sq. km. As per 2011 census, its population is 4,290,589 of which the tribes include 618,500 comprising 14.42 per cent of the total population. The total population of Bagata tribe in the state is 132,577 (5.04% to total tribal population) constituting the second largest community inhabiting mostly Visakhapatnam district. Though there are publications on rheumatoid arthritis by different tribes in different parts of India and abroad (Pawar & Patil 2006, Sutha *et al.* 2010, Nath *et al.* 2011) exclusive studies on the Bagata tribe of Andhra Pradesh were not available necessitating the present study.

Material and Methods

The ethnomedicinal data presented here are the outcome of a series of intensive field studies conducted during 2009-2011 in 44 interior tribal pockets with good forest cover and 60 *vaidyas* were consulted. Each field trip was of 5-8 days duration covering all seasons of an year. After establishing good rapport with the tribe, the utility of plants, detailed methods of uses were documented and cross-checked for authenticity. Voucher specimens were deposited in the Herbarium of the Department of Botany, Andhra University, Visakhapatnam (AUV).

Enumeration

The plants are enumerated and arranged in an alphabetical order with botanical name followed by family, vernacular name, locality, collector, voucher specimen number, method, mode and duration of the treatment. Plants and practices marked with an asterisk (*) are considered to be new or less known.

Abrus precatorius L. (Fabaceae) 'Guriginja' Matam, BS 9515

Seed paste is applied on the affected parts.

Alangium salviifolium (L. f.) Wangerin (Cornaceae)

'Uduga chettu' Cappada, BS 9562

Leaf paste is applied on the joints.

Allium cepa L. (Amaryllidaceae) 'Neerulli'

Poojaripakalu, BS 9616

*Bulb paste mixed with mustard oil is massaged on the affected areas.

Alpinia galanga (L.) Willd. (Zingiberaceae)

'Dumparashtramu' Bokkelu, BS 9527

1 or 3 gm of tuber powder or half tea glass of tuber decoction mixed with honey is administered once a day.

Alstonia scholaris (L.) R. Br. (Apocynaceae)

'Edakulapala' Thotalagondi, BS 9554

Stem bark crushed with leaves of *Vitex negundo* is plastered on the joints to reduce pain.

1 spoonful of stem bark powder is taken with pepper powder.

Anisomeles indica (L.) Kuntze (Lamiaceae) 'Ada beera' Sunkarimetta, BS 9518

*Leaves are crushed with castor oil, warmed and bandaged on the joints.

Anisomeles malabarica (L.) R. Br. (Lamiaceae) 'Maga beera' Kotagaruvu, BS 9671

Leaves and young branches are taken in equal quantities and ground into paste. It is rubbed over the affected areas daily twice till cure.



Anodendron parviflorum (Roxb.) I.M. Turner
(Apocynaceae) ‘Chedukura’ Pasupulankla, BS 9675

*1 spoonful of leaf powder is administered with water daily once.

Azadirachta indica A. Juss. (Meliaceae) ‘Vepa’
Jadiguda, BS 9755

Neem oil mixed with eucalyptus oil is massaged daily twice and hot water bath is taken.

Benincasa hispida (Thunb.) Cogn. (Cucurbitaceae)
‘Budida gummadi’ Guntaseema, BS 9778

*Half glass of fruit juice mixed with equal amount of water is taken on empty stomach.

Brassica nigra (L.) W.D.J. Koch (Brassicaceae)
‘Varnavalu’ Poojaripakalu, BS 9732

Seed oil is massaged over the affected areas daily twice for 1 week.

Bridelia retusa (L.) A. Juss. (Phyllanthaceae) ‘Mulla maddi’
Kinchumanda, BS 9781

*Half glass of stem bark decoction is administered daily once.

Cardiospermum halicacabum L. (Sapindaceae) ‘Budda
kakara’ Pilliputtu, BS 9749

Leaf juice mixed with castor/gingelly oil is mildly heated and used for massage daily.

Cassia fistula L. (Fabaceae) ‘Rela’ Vantalamamidi, BS
9572

Fruit pulp is applied on the affected areas.

Celastrus paniculatus Willd. (Celastraceae) ‘Palleru
thivva’ Pujariguda, BS 9784

Oil is used for massage on the affected areas.

Cinnamomum camphora (L.) J. Presl (Lauraceae)
‘Karpuramu’ Padmapuram, BS 9693

*Camphor oil is used to massage on the affected parts.

Citrullus colocynthis (L.) Schrad. (Cucurbitaceae)
‘Chedu puccha’ Sapparla, BS 9720

2 gm of root powder mixed with 1 gm of long pepper powder and 10 gm of old jaggery are made into paste and administered orally daily once.

Clerodendrum chinense (Osbeck) Mabb. (Lamiaceae)
‘Bandari’ Mampa, BS 9790

*1 spoonful of root paste is given orally with water daily once.

Coldenia procumbens L. (Boraginaceae) ‘Hamsapaadu’
Kusumaguruva, BS 9578

Leaf paste is bandaged over swollen joints.

Cyperus rotundus L. (Cyperaceae) ‘Tunga gaddi’
Rajupakalu, BS 9729

*Quarter spoon of tuber powder is administered twice a day.

Dichrostachys cinerea (L.) Wight & Arn. (Fabaceae)
‘Veluturu chettu’ Lankapakalu, BS 9731

Quarter cup of root or stem bark juice is administered daily once.

Erythrina variegata L. (Fabaceae) ‘Badita’ Mampa, BS
9648

*Leaf paste is mildly heated and bandaged on the painful parts.

Eucalyptus globulus Labill. (Myrtaceae) ‘Neelagiri
chettu’ Kothapalem, BS 9649

*Leaves with water are kept in a big vessel and a small vessel containing coconut oil is kept inside the bigger vessel and the mouth of the bigger one is closed with a lid containing water. The bigger vessel is heated and the fumes are collected in the small vessel containing oil. This oil is used for massage on the affected parts.

Euphorbia tirucalli L. (Euphorbiaceae) ‘Kada jamudu’
Nakkalputt, BS 9526

Latex is applied on the joints.

Hellenia speciosa (J.Koenig) S.R. Dutta (Costaceae)
‘Hamsa paadu’ Kusumaguruva, BS 9543

Half spoon of rhizome powder is taken twice a day.

Holarrhena pubescens Wall. ex G. Don (Apocynaceae)
‘Aku paala’ Chinamodhugaputt, BS 9711

50 ml of seed decoction is administered orally daily twice.

Holoptelea integrifolia (Roxb.) Planch. (Ulmaceae)
‘Nemali chettu’ Laksmipuram, BS 9837

Fresh stem bark is crushed and boiled with its leaves. Paste is plastered on the affected areas.

*Leaves and inflorescence are ground and mildly heated and bandaged on the affected areas.

Ipomoea nil (L.) Roth (Convolvulaceae) ‘Katuka ginjalu’
Chintalaveedhi, BS 9833

3 gm of seed powder mixed in 1 glass of hot water is given orally daily twice till cure.

Jatropha curcas L. (Euphorbiaceae) ‘Dola chettu’
Chinnalabbudu, BS 9714

Stem bark is crushed and mildly heated with castor oil and tied to the affected joints.

Justicia adhatoda L. (Acanthaceae) ‘Addasaram’
Kujjali, BS 9545

Strong leaf decoction is applied with cloth on the pained areas. Crushed leaf paste is applied on the affected areas.

Leonotis nepetifolia (L.) R. Br. (Lamiaceae) 'Pedha ranaberi' Doddavaram, BS 9624

20 gm of whole plant is made into decoction with 50 ml of water and administered daily for 3 days.

Limonia acidissima L. (Rutaceae) 'Velaga'

Sunkarimetta, BS 9867

*20 gm of stem bark juice is administered daily once in 1 spoonful dose for 3 days.

Luffa acutangula (L.) Roxb. (Cucurbitaceae) 'Chedu beera' Boddaputtu, BS 9868

*Unripe fruit juice is boiled in gingelly oil and used for massage on affected areas.

Melia azedarach L. (Meliaceae) 'Turaka vepa' Ebulam, BS 9712

Seeds are ground with cow ghee and the paste is applied on the affected parts.

Mimosa pudica L. (Fabaceae) 'Atti patthi' Gabbangi, BS 9872

Fresh leaf paste kept in a cloth is bandaged over the affected areas.

Moringa oleifera Lam. (Moringaceae) 'Munaga'

Pilliputtu, BS 9860

Quarter cup of root decoction is administered twice a day.

Mucuna pruriens (L.) DC. (Fabaceae) 'Dula dama'

Devarapalli, BS 9741

*Quarter cup of root juice is administered daily once for 1 month.

Oroxylum indicum (L.) Kurz (Bignoniaceae) 'Pampenga' Gadaparai, BS 9513

Quarter cup of root decoction mixed with 1 spoonful of castor oil is administered twice a day.

Petalium murex L. (Pedaliaceae) 'Yenugupalleru' D.

Gonduru, BS 9705

2 spoonful of leaf juice mixed with 1 spoonful of gingelly oil is mildly heated and used for massage. 2 spoonful of it is taken with milk orally daily once.

Pleurolobus gangeticus (L.) J.St. Hil ex H. Ohashi & K.

Ohashi (Fabaceae) 'Bhumi ippa' Guntaseema, BS 9771

*1 spoonful of root decoction is administered daily once.

***Plumbago auriculata** Lam. (Plumbaginaceae) 'Nalla

chitramoolam' Anthram, BS 9556

1 spoonful of root paste is administered with milk or water daily once for 15 days.

Plumbago indica L. (Plumbaginaceae) 'Yerra

chitramulam' Anthram, BS 9534

Root paste is mixed with gingelly oil, mildly heated and massaged on the affected areas.

Pongamia pinnata (L.) Pierre (Fabaceae) 'Ganuga'

Chinamodhugaputtu, BS 9808

Seed oil mixed with equal quantity of lemon juice is massaged on the swellings and 2 spoonful of bark juice is administered orally daily once.

Saraca asoca (Roxb.) W.J. De Wilde (Fabaceae) 'Asoka chettu' Mampa, BS 9827

*Mildly heated stem bark paste is plastered on the affected areas.

Semecarpus anacardium L.f. (Anacardiaceae) 'Nalla

jeedi' Sukuru, BS 9804

Stem bark is crushed, boiled and bandaged on the affected areas to reduce swellings and pain.

Senna tora (L.) Roxb. (Fabaceae) 'Tantepu mokka'

Modaputtu, BS 9756

*Leaves are crushed, heated with castor oil and bandaged on the affected parts.

Sterculia urens Roxb. (Malvaceae) 'Kovila chettu'

Thotalagondi, BS 9633

*5 - 10 gm of gum or 20 gm of stem bark is administered orally with curds.

Terminalia arjuna (Roxb. ex DC.) Wight & Arn.

(Combretaceae) 'Tellamadhi' Ellipalem, BS 9542

*Leaf juice is applied on the pained parts.

Terminalia chebula Retz. (Combretaceae) 'Karakkai'

Ganjigedda, BS 9734

*Equal amounts of myrobalan powder and castor oil made into paste is administered orally daily once.

Thalictrum foliolosum DC. (Ranunculaceae) 'Piyaranga'

Thotalagondi, BS 9552

1 spoonful of root paste is administered with half glass of water daily once for 15 days.

Tribulus terrestris L. (Zygophyllaceae) 'Palleru'

Gadiguddi, BS 9820

*A cup of whole plant juice is heated with ¼ cup of gingelly oil till it is reduced to ¼ cup. 2 spoonful of it is taken with half cup of milk and oil is used for massage of affected areas.

Tridax procumbens L. (Asteraceae) 'Ganti mandhu'

Pilliputtu, BS 9818

*Leaves (10-15) are chewed daily on empty stomach.

Triumfetta rhomboidea Jacq. (Malvaceae) 'Dhekki'

Ramulaputtu, BS 9816

*Leaves are crushed and massaged on the affected areas to reduce swellings and pain.

Vitex negundo L. (Lamiaceae) ‘Vayila’ Choutapadu, BS 9691

Oil is used to massage the affected areas.

1 glass of leaf juice is mixed with 1 glass of gingelly oil and slightly heated is used for massage.

Wattakaka volubilis (L. f.) Stapf (Apocynaceae)

‘Palatheega’ Rallaputtu, BS 9810

*2 leaves ground with 2 pepper grains and paste is administered orally daily once on alternate days for 40 days on empty stomach.

Withania somnifera (L.) Dunal (Solanaceae)

‘Pennerugadda’ Araku, BS 9690

1 spoonful of root paste is taken with water daily once. It is mixed with equal quantities of dried ginger and plastered on the affected areas.

Zingiber officinale Roscoe (Zingiberaceae) ‘Allam’

Modapalli, BS 9670

30 gm each of dried rhizome and roots of *Ricinus communis* are boiled in 4 glasses of water till it gets reduced to 1 glass of decoction. Half glass of it is administered orally twice a day.

Ziziphus mauritiana Lam. (Rhamnaceae) ‘Regu’

Modaputtu, BS 9553

*Half glass of stem bark decoction is administered daily once.

Results and Discussion

The paper deals with 58 species of plants covering 55 genera and 34 families used by the Bagata tribe of Andhra Pradesh for rheumatoid arthritis. Fabaceae is the dominant family with 10 species followed by Apocynaceae (four spp.), Cucurbitaceae, Lamiaceae (three spp. each), Malvaceae, Combretaceae, Meliaceae, Plumbaginaceae, Euphorbiaceae, Zingiberaceae, (two spp. each), and others with one species each. Habit-wise analysis showed the dominance of trees with 20 species, followed by herbs (17 spp.), shrubs (15 spp.), and climbers (six spp.). Morphological analysis showed the maximum utilization of leaf in 18 practices followed by root and stem bark (11 each), oil (six), seed (five), fruit (three), whole plant and tuber (two each) and stem, latex, gum, bulb, rhizome, inflorescence in one practice each. *Plumbago auriculata* and 25 practices were found to be new or less known (Jain 1991, Kirtikar & Basu 2003). Plants used for similar purpose in different parts of India, Bangladesh and Nepal are arranged in a tabular form (Table 1).

Table 1. Some plants of Bagata tribe of Visakhapatnam district used for similar purposes in different countries.

Plant species	Tribes/Area/Region/Country	Reference(s)
<i>Plumbago zeylanica</i>	Koraga, Malekudiya, Halakkivokkaliga, Siddi and Gowli tribes of Coastal Karnataka	Bhandary & Chandrashekar 2002
<i>Benincasa hispida</i> , <i>Erythrina variegata</i> , <i>Euphorbia tirucalli</i> , <i>Jatropha curcas</i> , <i>Justicia adhatoda</i> , <i>Pongamia pinnata</i> , <i>Semecarpus anacardium</i>	Bhil, Konkani, Tadvi, Vanjari, Pawara tribes of Jalgaon district, Maharashtra	Pawar & Patil 2006
<i>Cyperus rotundus</i>	Folklore of wetlands of Kathmandu and Pokhara valleys, Nepal	Joshi 2009
<i>Oroxylum indicum</i> , <i>Semecarpus anacardium</i>	Gond, Kol, Baiga, Panica, Khairwar, Manjhi, Mawasi, Agaria tribes of Rewa district, Madhya Pradesh	Shukla <i>et al.</i> 2010
<i>Erythrina variegata</i> , <i>Moringa oleifera</i>	People of Northern districts of Karnataka	Shiddamallayya <i>et al.</i> 2010
<i>Abrus precatorius</i> , <i>Anisomeles indica</i> , <i>Anisomeles malabarica</i> , <i>Azadirachta indica</i> , <i>Cardiospermum halicacabum</i> , <i>Erythrina variegata</i> , <i>Mimosa pudica</i> , <i>Vitex negundo</i>	Kanikkar tribe of Western Ghats, Tamil Nadu	Sutha <i>et al.</i> 2010
<i>Alstonia scholaris</i>	Chakma, Marma, Tripura tribes of Chittagaong Hill tracts of Bangladesh	Biswas <i>et al.</i> 2010
<i>Brassica nigra</i> , <i>Cissus quadrangularis</i> , <i>Holarrhena pubescens</i> , <i>Jatropha curcas</i> , <i>Moringa oleifera</i> , <i>Pongamia pinnata</i> , <i>Vitex negundo</i>	Ethnic groups in Assam	Nath <i>et al.</i> 2011
<i>Cardiospermum halicacabum</i> , <i>Tribulus terrestris</i>	Malasar tribe of Velliangiri hills of Western Ghats, Tamil Nadu	Murugesan <i>et al.</i> 2011
<i>Justicia adhatoda</i> , <i>Vitex negundo</i>	Folklore of Corbett Fall, Uttarakhand	Pant 2012
<i>Celastrus paniculatus</i> , <i>Pongamia pinnata</i> , <i>Tridax procumbens</i>	Kondh, Gond, Saura, Mirdha, Munda, Kharia, Kora, Kolha tribes of Boudh district, Odisha	Sahu <i>et al.</i> 2013
<i>Abrus precatorius</i>	People of Sunsari district, Nepal	Deokata & Chhetri 2013
<i>Jatropha curcas</i> , <i>Oroxylum indicum</i>	Mizo, Mara, Lai, Chakama, Bru, Pand, Bawn, Magh tribes of Mizoram	Shukla <i>et al.</i> 2014
<i>Melia azedarach</i> , <i>Thalictrum foliolosum</i> , <i>Vitex negundo</i> , <i>Withania somnifera</i> , <i>Zingiber officinale</i>	People of Kullu district, Himachal Pradesh	Kumari <i>et al.</i> 2016
<i>Alstonia scholaris</i> , <i>Azadirachta indica</i> , <i>Celastrus paniculatus</i> , <i>Terminalia arjuna</i> , <i>Terminalia chebula</i>	Lodha tribe of West Bengal	Chaudhury <i>et al.</i> 2018

All the new uses must be taken up for further scientific validation and pursued for value addition for the development of drugs.

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