The natives of Eastern Ghats use different parts of plants in crude form to treat bone fractures. Forty two plant species of angiosperms belonging to 33 families are reported during the floristic survey. For each plant species, details on the scientific name, family, local name and use are provided along with parts harvested for treatment, the manner of processing and the mode of administration.

**Keywords:** Phytotherapy, Bone fractures, Eastern Ghats, Andhra Pradesh

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Plants have been used as primary sources of medicine for thousands of years. Traditional healers have been identifying, experimenting and using these substances to treat patients for millennia. Many of today’s modern medicines are derived from plants. However, due to continuous use of various plant species for medicine and other purposes, indiscriminate destruction of forests and natural habitats and unsustainable harvesting, most of the plant species are either becoming less abundant or on the verge of extinction. Therefore, it is necessary to document the knowledge and plant species and conserve it for future. The authors had explored the study area and documented around 42 plant species of ethnomedicinal importance for treating bone fractures. The plants enumerated in this paper make an addition to previous work.

**Study area**

The Eastern Ghats are a discontinuous range of mountains along India’s Eastern coast. The Eastern Ghats run from Orissa state in the North, through Andhra Pradesh to Tamil Nadu in the South and some parts of Karnataka. The Eastern Ghats are located between 77° 22’ E longitude and 11° 31’ and 21° 0’ N latitudes in the tropical region. The climate regime of the Eastern Ghats is tropical monsoon, with an average rainfall of 1000-1600 mm annually. The temperature ranges between 20-25°C during winter and 30-32°C in summer.

**Methodology**

Exploration trips were carried out regularly as a part of a series of ethno botanical studies in order to collect first hand information from traditional practitioners. The collected information was recorded in field note books. Medicinal plants shown by the tribal healers were collected from the field and voucher herbarium specimens were prepared, identified and deposited in the Herbarium of Botany Department of Andhra University, Visakhapatnam. The collected information was cross-checked with the information from neighbouring herbalists and also with available literature. It revealed that the work done on bone fractures is very fragmentary.

The drug yielding plants are arranged in alphabetical order with their botanical name followed by family (in parenthesis), vernacular name, preparation and mode of administration of the drug. The newly reported plants and uses have been marked with an asterisk.

**Enumerations**

*Alangium salvifolium* (L. f.) Wang., (Alangiaceae),

**Udugu chettu**

- *Root bark is cleaned with urine of a boy (below 5 yrs) and ground, and made into a paste. The paste is applied on the affected areas and bandaged.*

*Alternanthera sessilis* (L.) R. Br., (Amaranthaceae),

**Ponnagandikura**

- *Paste made out of the herb is applied over the fractured area.*
Amorphophallus paeoniifolius (Dennst.) Nicolson var. campanulatus (Decne.) Sivadasan, (Araceae), Siri kanda
  • *Three spoonful of corm paste mixed with a spoonful of lemon juice is applied on the affected areas and bandaged till cure.

Andrographis paniculata (Burm. f.) Wall. ex Nees, (Acanthaceae), Nelemu
  • *Whole plant extract mixed with goat milk and egg albumin is applied on the fractured area.

Azadirachta indica A. Juss., (Meliaceae), Yepa chettu
  • *Stem bark with that of Naravelia zeylanica, root of Withania somnifera and Tinospora cordifolia are taken in equal quantities and made into decoction. Half cup of egg albumin and sesame oil is added to decoction. 2 spoonful of decoction is administered daily twice for 30 days.

Casearia elliptica Willd., (Flacourtiaceae), Girugudu
  • *Three spoonful of leaf juice mixed in a glass of hot milk is administered daily once for a month.

Cassia auriculata L., (Caesalpiniaceae), Thangedu
  • *Leaf paste mixed with egg albumin is applied on the fractured or dislocated area daily once for a week.

C. occidentalis L., (Caesalpiniaceae), Eddukommakoora mokka
  • Leaf paste mixed with egg albumin is applied on the fractured area and bandaged.

*Christiella subpubescens* (Bl.) Holttum, (Thelypteridaceae), Kokkodi
  • Rhizome paste with tuberous root paste of Curculigo orchioides (1:1) is applied on the affected areas and bandaged, change the paste and bandage for every 2 days till cure.

Chromolaena odorata (L.) King & Robinson, (Asteraceae), Kampurodda
  • Whole plant paste is applied over the fractured area.

Cissus quadrangularis L., (Vitaceae), Nalleru
  • Whole plant is made into paste and plastered over the fractured part, simultaneously the paste of 1 internode length of the stem with ghee is taken once for every 3 days till cure. Plastering of the paste is also repeated for every 3 days.

Cissus repens Lam., (Vitaceae), Kuppi rodda
  • *Root paste is applied and bandaged over fractured areas.

*Cochlospermum religiosum* (L.) Alston, (Cochlospermaceae), Konda buruga
  • *Stem bark paste is plastered over the bone fractured areas for a month.

Curcuma longa L., (Zingiberaceae), Pasupu
  • *Rhizome paste with young prop roots of Ficus benghalensis and roots of Spermacoce articularis with white of egg and jaggery is applied to bone fracture for 9 days.

Desmodium triflorum (L.) DC., (Fabaceae), Aamsingari
  • *Plant paste along with the aerial roots of Ficus benghalensis is used as a plaster for bone fracture.

Dichrostandychs cinerea (L.) Wight & Arn., (Mimosaceae), Velthuru chettu
  • *Root bark with seeds of Piper nigrum and bulbs of Allium sativum are taken in equal quantities and ground. 2 spoonful of paste is administered daily twice for 15 days, meanwhile the paste is applied on the affected areas and bandaged.

*Diospyros chloroxylon* Roxb., (Ebenaceae), Thorika
  • Stem bark is ground with that of Holoptelea integrifolia, roots of Plumbago zeylanica and garlic cloves and the paste is plastered over fractured bone, simultaneously pills of bengal gram seed size are made from the paste and is given in doses of 2 pills twice a day for about a month.

*Diospyros melanoxylon* Roxb., (Ebenaceae), Tuniki
  • *Unripe fruit paste is plastered over bone fracture.

Dodonaea viscosa (L.) Jacq., (Sapindaceae), Adivibandaru
  • *Bruised leaves are plastered and bandaged over fractured areas.

Eichhornia crassipes (Mart.) Solms., (Pontederiaceae), Gurrapu dekka
  • *Stem bark cleaned with urine of a boy (below 7 yrs old) is dried and powdered. 2 spoonful of powder is administered daily twice for 21 days. Paste is also applied on the affected part and bandaged.

*Erythrina fusca* Lour., (Fabaceae), Tellabadita
  • Seed paste is applied as a plaster for bone fracture.
**Euphorbia nivulia** Buch.-Ham., (Euphorbiaceae), *Aakujamudu*
- Stem bark powder with goat milk and jaggery made into a paste and is plastered over fractured areas.

**Ficus religiosa** L., (Moraceae), *Raavi chettu*
- Stem bark cleaned with urine of a boy (below 7 yrs old) is taken and ground. 2 spoonful of paste is administered daily twice for 21 days. Paste is also applied on the affected part and bandaged.

**Garuga pinnata** Roxb., (Burseraceae), *Garuvu manu*
- Stem bark paste is plastered over the bone fractured areas for 2 months.

**Grewia rothii** DC., (Tiliaceae), *Bonsula*
- Leaf paste is plastered over the bone fractured areas till cure.

**Ipomoea carnea** Jack. ssp. *fistulosa* (Mart. ex Choisy) Austin, (Convolvulaceae), *Toothaku*
- Root and leaf paste is plastered over the fractured area.

**Lannea coromandelica** (Houtt.) Merr., (Anacardiaceae), *Dumpidi*
- Stem bark along with the bark of *Ziziphus mauritiana* is taken in equal proportions, the plaster is warmed and applied on the fractured area.

**Litsea glutinosa** (Lour.) Robinson, (Lauraceae), *Naramamidi*
- Ten spoonful of stem bark powder with 5-6 spoonful of water is applied on the affected area and bandaged for 3 days.
- Stem bark paste is applied on the affected areas and bandaged for 20 days and repeated again for 20 days.
- Stem bark paste mixed with goat milk is plastered over fractured bone.

**Macaranga peltata** (Roxb.) Muell. Arg., (Euphorbiaceae), *Konda tamara*
- Seed paste with coconut oil (5:1) is applied on the affected areas and bandaged for 21 days.

**Mimosa intisia** L., (Mimosaceae), *Korinda*
- Root paste with egg albumin is plastered over the bone fractured areas till cure.
- Two spoonful of root bark extract in cold water is administered twice a day till cure. Simultaneously the root bark paste is plastered over the affected area.

**Oxalis corniculata** L., (Oxalidaceae), *Pulisinta*
- Whole plant is made into paste with tender prop roots of *Ficus benghalensis* and is applied on the fractured part and bandaged with light bandage for 9 days. After removing the bandage, the paste is applied for 7 more days.

**Phoenix loureiroi** Kunth, (Arecaceae), *Adivichettu*
- Tender stem is ground with fruits of *Terminalia chebula* and the paste is plastered over the fractured area for setting.

**Plumbago indica** L., (Plumbaginaceae), *Yerra chitramulam*
- Roots are ground with leaves of *Pergularia daemia* and *Vanda tessellata* and the paste is plastered and bandaged for 21 days.

**Polyalthia longifolia** (Sonner) Thw., (Annonaceae), *Naramamidi*
- Stem bark with seeds of *Sesamum indicum* and *Piper nigrum* are taken in equal quantities, soaked in water for one hour, heated and ground. 2 spoonful of paste mixed with egg albumin is administered daily twice for 30 days. Meanwhile paste mixed with lime is applied on the fractured area and bandaged.

**Rhaphidophora pertusa** (Roxb.) Schott, (Araceae), *Balarakkisa*
- Aerial roots and the leaves are ground into paste and is plastered over fractured bone till the bone sets. It is observed that the bone sets without any intramuscular blood clots.

**Sida acuta** Burm. f., (Malvaceae), *Parasuwalka*
- Crushed leaves are applied externally over the fractured area.
Spermacoce articulatis L. f., (Rubiaceae),
**Madanaku**
- Roots along with rhizome of Curcuma longa, young prop roots of Ficus benghalensis are made into paste along with egg white and jaggery and is applied to bone fracture for 9 days.

Terminalia cuneata Roth, (Combretaceae), **Tella maddi**
- Fifty ml of stem bark decoction mixed with 5 spoonful of ghee is applied on the affected areas for half an hour daily once for a week.

Tinospora cordifolia (Willd.) Hook. f. & Thoms., (Menispermaceae), **Amruthavalli**
- Two spoonful of stem paste mixed in a glass of milk is administered daily twice for 20 days.

Ziziphus oenoplia (L.) Mill., (Rhamnaceae), **Pariki**
- Leaves are crushed with that of Acacia chundra and the filtrate is administered in doses of 2 spoonful thrice a day for 5 days and the leaf paste mixed with gum of Sterculia urens is plastered over the fractured bone.

**Results and discussion**

The present paper emphasizes 42 plant species belonging to 33 families used for the treatment of bone fractures by the folklore of Eastern Ghats. Six plants species Christiella subpubescens, Diospyros chloroxylon, Erythrina fusca, Mimosa intsia, Phoenix loureiroi and Rhaphidophora pertusa, and 28 uses have been reported newly after comparing with the earlier works.

As the green wave gains discipline all over the world investigations on its legitimacy have increased. The therapeutic properties of higher plants offer a virtually untapped reservoir of potentially useful sources of drugs that will continue to serve humankind in this century as they have done since the dawn of history. Scientific interest in medicinal plants has burgeoned due to increased efficacy of new plant desired drugs, growing interest in natural products and rising concerns about the side effects of controversial medicine.

Further researches are needed on these herbs to ascertain their biologically active compounds and their efficacy. The therapeutic properties and merits of every prescription including the plant products and additives that furnished the folk remedies which are used on empiric grounds since generations with a notable degree of success should therefore, be investigated scientifically in order to give full rational evaluation on their alleged uses.

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**References**