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## Ethno medicinal plants used in bone fracture in Tamar block of Ranchi district of Jharkhand

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### Abstract

Tamar Block of Ranchi District of Jharkhand has a rich diversity of medicinal plants. Population of the area has distinct traditions and taboos in their lives. Likewise, local people have certain traditions to cure prevailing human ailments. Data collection relied predominantly on qualitative tools to record the interview's personal information and topics related to the medicinal use of specific plants. Present paper deals with the 11 (Eleven) ethno medicinal plants which are used in Bone fracture in Tamar Block of Ranchi District of Jharkhand. Firsthand information was gathered by tribal Baidhyas and knowledgeable people regarding the ethno medicinal plants, their uses, methods of drug preparations, methods of drug administration and duration of treatment. All these ethno medicinal plants were very useful to treat Bone fracture. The plant parts used varies from different plant healers to healers. Some of them uses the above parts while the others are uses the below parts. Most of the locals interviewed dealt with well-known safe medicinal plants, such as *Cissus quadrangularis* L., *Pterocarpus marsupium* Roxb., *Shorea robusta* Gaertn, *Terminalia arjuna* (Roxb.) W & A. with more uses value respectively. Thus documented ethno medicinal plants are important gradient to cure the fractured Bones of the patients. These ethno medicinal plants were most important to ailments of Bone fracture. There was no any side effect recorded from the surrounding area. Hence there is a great demand to conservation of these ethno medicinal plants. These plants were distributed across 10 families and 11 genera.

**Keywords:** Ethno medicinal plants, Bone Fracture, Tamar Block, Baidhyas, Healers, Conservation

### Introduction

Fracture healing is a complex physiological process that involves the co-ordinated participation of hematopoietic and immune cells within bone marrow. It conjunction with vascular and skeletal cell precursors, it also includes mesenchymal stem cells which are recruited from the circulation and the surrounding tissues. Bone fracture healing is proliferative, physiological process in which the body facilitates the repair of a bone fracture. It involves complex processes of cell and tissue proliferation and differentiation. Many factors are involved including growth factors inflammatory cytokines, antioxidants osteoclast and osteoblast cells, hormones, amino acids and uncounted nutrients. In general bone fracture treatment consists of pushing dislocated bone back it place via relocation with or without anesthesia stabilizing their position and then waiting for the bones natural healing process to occur.

The treatment of bone fracture is found in the writing of Sushruta (500 B C) described fraction, manipulation and immobilization by splint and by special variety of clay and also in the times of the Hippocrates in 400-335 B.C.

Tamar Block is one of the tribal Block of Ranchi District of Jharkhand and is with an area of 513.91 km<sup>2</sup> and forest area is 148.71km<sup>2</sup> (29%) and lies between 23°3'21" N and 85°39'44" E. Tamar Block has rich population of tribals accounting 62% of the total population. The area is dominated by Munda and their sub tribes Pahan, Puran and Oraon. They follow primitive customs, occupations and have a rich indigenous culture. Tribals do not believe in modern medicines and used to treat diseases from local medicine men called Baidhyas, Guni, Ojha etc. Local medicine men collect ethno medicinal plants from forests. They treat their diseases from local traditional healers and rarely go outside for health care. Traders come in the local market and purchases medicinal plants and their parts, so demand of ethno medicinal plants is increasing and some plants becoming threatened due to trading. Tribals are totally dependent on plants. Plants used for bone fracture are of age old practices in India. The reference to the curative or healing properties of certain herbs in Rigveda seems to be the earliest record of use

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of plants in medicine. Plants associated with healing of bones in ancient times are also found in many literatures.

In clinical practice, there are many methods and techniques described for the treatment of fracture that would enable it to heal within reasonable amount of time. The bone tissue is one of the very active tissues of the body and its reparative process is so efficient that under ideal condition, it can fully restore its normal structure after complete dissolution without leaving behind any trace of earlier injury. The mechanical fixation is only a means of immobilization for healing but it has now been seen that the bone tissue is one of the very active tissues of the body.

Fracture healing not only needs surgery, slings braces, or any other device but also needs proper nutrition and overall health, this is because broken bones can repair themselves naturally. The treatment is needed just to assist the natural healing process.

Phemister (1951) stated that when bone is fractured, it is usually necessary to employ mechanical means to reduce and maintain the fragments in position, but the healing of fracture is governed by biological principles with which mechanical measure must be co-ordinated.

Chen et al. (2009) showed that for a small and medium sized fractured gap, the nutrient supply is sufficient for bone healing and for a large sized fracture gap, nonunion may

induced either by deficient nutrition supply or by inadequate mechanical condition.

#### Material and Methods:-

Extensive ethno medicinal field surveys were made during 2014-2015 and 15 villages of Tamar Block were visited place by me, Agra, Bandu, Birdih, Deori, Dulmi, Jareya, Jaradih, Jojodih, Kasam Burudih, Kubasal, Poradih, Rugri, Salgadih, Sirkadih and Sunderdih. Literatures were consulted to verify the plants and their ethno medicinal importance. Ethno medicinal data were collected from 12 informants aged between 37-65 involving common villagers and recognized traditional herbal practitioners known as Baidhyas. In each locality, all the informants were interviewed directly in Mundari and Hindi languages. Interviews were arranged by village level health workers familiar with local languages and the medicinal plants used for the treatment. Interviews were documented with notebooks. Information provided by them was cross verified from the informants of other localities as well as through literature. Plant species ( Table-I) were identified with local names by respondents and then identified taxonomically according to the floras such as Haines Flora, Glossary of Indian Medicinal Plants ( Jain et al), Kirtikar and Basu etc. The species were listed in alphabetical order by scientific name, local name, family, uses and dosages etc.

**Table 1**

Sl. No.	Botanical name of Plant	Family	Local name	Utilize part use	Ailments
1.	<i>Acacia arabica</i> L.	Mimosaceae	babool	whole plants	This plant is used in fracture and muscle spasm such as trismus. It is used in inflammatory arthritis.
2.	<i>Bambusa arundinacea</i> Willd	Poaceae	Bamboo	Whole plants	It causes decrease inflammatory thereby helping in fracture healing. It has benzoic acid, traces of cyanogenic glycoside and silicon substances which help in fracture healing. It has also calcium phosphorus and zinc. Oral or topical application of paste of the stem or leaves is used in fracture healing.
3.	<i>Calamus tenuis</i> Roxburgii	Arecaceae		Stem, root	Powdered stem and root along with fresh turmeric rhizome are made into paste and applied on the fractured bone for proper setting.
4.	<i>Cissus quadrangularis</i> L.	Vitaceae	Harjor	Whole plants	This plant is macerated to form paste. The paste is applied thickly over the fractured area and bandaged with leaves of Banana or Calocasia.
5.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Doodhi	Roots	The roots of <i>Euphorbia hirta</i> and Palas are crushed together and applied on the fractured place. Also the mixture of the two is crushed well and the extract is removed. Half a cup of the extract is taken twice a day, in morning and evening on empty stomach.
6.	<i>Mussaenda frondosa</i> L.	Rubiaceae	Shrivara/Bedina	Leaf, stem	Mixture of paste of stem, leaf and rhizome of <i>Zingiber officinale</i> binds the broken bone about 3 days. It cures the fracture portion.
7.	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Asan/Bijaysaar	Leaf, stem	Give 1 teaspoonful powder of its leaves, 2-3 times a day, with 1 cup of milk, for a few weeks. It strengthens the bone and helps the fracture heal faster. Grind its stem with ghee and apply the paste on the fracture and then cover it with bandage. It helps in joining the bones.
8.	<i>Rubia cordifolia</i> L.	Rubiaceae	Manjesta	Roots	The roots of the plant are sweet, bitter, acrid and used as anti-inflammatory haemostatic. It is used for the treatment of major burns, ulcers and bone fractures.
9.	<i>Shorea robusta</i> Gaertn. F.	Dipterocarpaceae	Sal/Sakhua	Gum, Bark	The gum of sal tree is applied on fracture bone, it sets the bone. The paste of bark is applied on affected area; it helps to the circulation of blood.
10.	<i>Terminalia arjuna</i> (Roxb.) W & A.	Combretaceae	Arjun	Barks	It contains tannins, arjunic acid, arjunantin, Calcium carbonate and sodium chloride. The bark has hemostatic properties. Powder of bark is used orally for bone fracture treatment.
11.	<i>Vitex negundo</i> L.	Verbanaceae	Sindwar	Leaves	The leaves are crushed with salt and made into a paste. Bandaged with it after setting the bones properly.



(*Acacia arabica* L.)



(*Bambusa arundinacea* Willd)



(*Cissus quadrangularis* L.)



(*Euphorbia hirta* L.)



(*Shorea robusta* Gaertn. F.)



*Terminalia arjuna* (Roxb.)W &A.



(*Vitex negundo* L.)

### Result and Discussion

The ethno medicinal plants studied are enumerated with their botanical names, family, vernacular names, parts used, mode of administrations etc. Some plants were used individually while some were used in formulation. A total of 12 herbal practitioners and 27 patients of bone fractures were consulted. The record for successful treatment was found to be 95 %. Present study records 11 ethno medicinal plants in bone fracture which are distributed in 10 families. Roots, stem, leaf, bark, latex, seeds etc. have been used in bone fracture.

About 75% of the total population of the state of Jharkhand depends on the herbal medicine and herbal products to their primary health care. Any ethno botanical exploration of this area had not been conducted previously for the treatment of bone fracture.

People of Tamar Block of Ranchi District use these ethno medicinal plants from time immemorial. It is now urgent necessary to preserve this traditional knowledge of the treatment by proper documentation and identification of medicinal plants. Mainly the tribal people of this area are very poor therefore are not able to access high cost of allopathic

medicine for primary health care. Hence, all ethno medicinal plants of the area should be conserved by villagers as well as Government bodies.

On the basis of our observation we have suggested that these ethno medicinal plants may be very useful of cure bone fracture. These plants are the boon of the God for treatment of other diseases also. Hence, there is urgent need for the extensive conservation, massive cultivation and transfer of this knowledge to the next generation.

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