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Debasish Patra
Department of Environmental Science, Fakir Mohan University, Balasore, Odisha, India

Ranindra Kumar Nayak
[1] Department of Environmental Science, Fakir Mohan University, Balasore, Odisha, India
[2] Centre of Excellence for Bio-Resource Management and Energy Conservation Material Development, Fakir Mohan University, Balasore, Odisha, India

Corresponding Author:
Ranindra Kumar Nayak
[1] Department of Environmental Science, Fakir Mohan University, Balasore, Odisha, India
[2] Centre of Excellence for Bio-resource Management and Energy Conservation Material Development, Fakir Mohan University, Balasore, Odisha, India

Indigenous knowledge and ethnomedicinal uses of plants for the treatment of wounds by the forest dwellers of Keonjhar district of Odisha, India

Debasish Patra and Ranindra Kumar Nayak

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Abstract
Ethnomedicinal survey has been carried out in the Keonjhar district of the state of Odisha in India to collect information on the prevailing medicinal plants used as medicine for the treatment of wound by local tribe and other forest dweller during 2018-2022. Forest area of the district is dominated by different ethnic group of tribes like Gond, Bathudi, Kol, Santal, Juang, Bhuyan, Bhumija and Saunti. It has been observed that people of these ethnic group depend on forest for their livelihood and medicine for primary health care. The present paper deals with 32 plant species belonging to 25 families, which are used as folk medicine for the treatment of wound. Ethnic group of the district are fully or partially depend on local medicinal plants because of the poor modern healthcare facilities and their inert poverty. An attempt has been made to document traditional knowledge from the local people, Baidyas and Gunia of Anandpur, Ghatgaon, Harichandanpur, Saharpada, Patna, Telkoi, Banspal and Joda blocks of Keonjhar district for the treatment of wound.

Keywords: Indigenous knowledge, ethnomedicinal uses, Keonjhar district

1. Introduction
Odisha is one of a costal State of India, which lies between between17°48′- 22°44′ N latitude and 81°24′ - 87°29′ E longitude. It consist of 30 districts and have 22.85% of population belonging to different tribal groups who live in harmony with the nature. Keonjhar is one of the tribal dominated districts present on the northern part of the state. It lies between 21°1′ to 22°10′ N latitude and 85°11′ to 86°22′ E longitude (Fig.1). The total area of the district is about 8303 sq. kms and has 45.4% of tribal population. There are 11 tribal communities present throughout the district. Some important tribes are Gond, Bathudi, Bhuyan, Santal, Kol, Juang and Saunti. The ethnic groups and other forest dweller live near hill range or within the forest are very poor. Economic conditions of these people are very miserable to manage their livelihood. Generally, they do not use shoes while doing their activities inside the forest and most of the time they get wounded. Due to lack of modern healthcare facilities in their locality, they partially or fully depend on herbal medicine for the treatment of their wounds. This is the main alternative method of treatment in this area. The district is very rich and well known for different plant varieties. Different plant parts like root, stem, leaf, bark and whole plant are used as medicine for curing of ailments. Traditional Baidyas from tribal communities had been using it for treatment of diseases. This system of practice by using of herbal plants and their ingredients for the treatment of diseases have become a part of their culture till recent years. In due course of time entry of market based economy exploited the natural resources in this district as well as other district of Odisha having tribal population with rich Indigenous knowledge [1, 2].
Most affected part in this process was medicinal plants that have been gradually disappeared from the nature. This fact is evident from the systematic study of literature on the ethnomedicinal uses of plants for the treatment of various disease in the state of Orissa [3-9]. Besides this, the impact of biotic factors such as urbanization, industrialization have caused the loss of forests resulting in the loss of biodiversity as well as the indigenous knowledge in different regions of the state of Odisha [10-20].
Although number of reports are available on the treatment of wounds by traditional methods by various ethnic groups in different parts of Odisha and other parts of India [21-33] but the detailed study on ethnomedicinal plants used for the treatment of wound by various ethnic population of Keonjhar district is lacking.

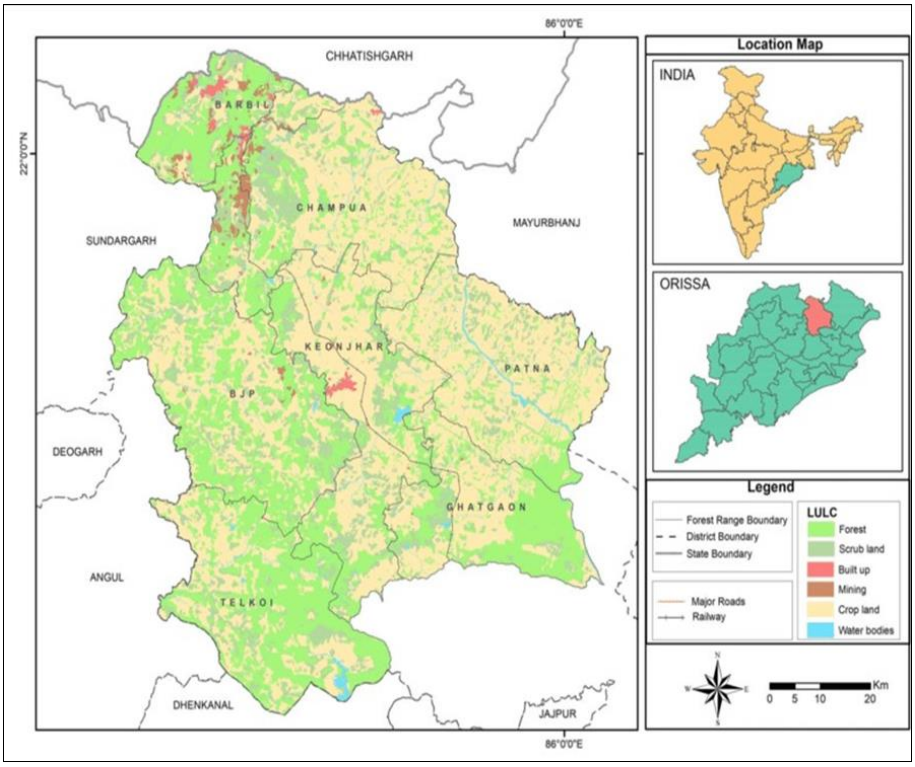

Fig 1: Map of Keonjhar district of Odisha

Therefore in this paper an attempt has been made to document traditional knowledge regarding the use of medicinal plants and plant product for the treatment of wounds by the local people, Baidyas and Gunia of Anandpur, Ghatgaon, Harichandanpur, Saharpada, Patna, Telkoi, Banspal and Joda blocks of Keonjhar district of Odisha.

2. Materials and Methods

2.1 Plant collection and preservation

Regular field trips have been conducted in different seasons of the year during 2017-2022 to various locations of the study region to know the distribution pattern and natural habitat of medicinal plants. The plant species collected have been identified with the help of regional flora books [34-35]. Herbarium samples have been collected from different locations of the study areas and the herbarium specimens have been prepared for future reference followings standard methods [36].

2.2 Method of data collection

The ethnobotanical data have been collected from the local ethnic groups like Gond, Bathudi, Bhuyan, Santal, Kol, Juang, Saunti and other forest dweller of Anandpur and Keonjhar forest division. The local elderly people with specialised knowledge on the medicinal plants have been consulted during the field survey. A number of group discussions have been done among the local people during the period of investigations. Experienced older people, local medicinal practitioner like Baidya, Kabiraj and Gunia have been interviewed for the first hand information on ethnomedicinal uses of plants. As far as possible, the data have been verified by criss-cross checking method to confirm the authenticity of the information.

3. Results and Discussion

During the present investigation, it has been observed that 32 plant species belonging to 30 genera and 25 families are used for curing of different types of wounds (Table 1). It has been observed that maximum number herb species (15) followed by tree species (10) and shrub species (7) are used in the treatment of wound. In this paper, 50 prescriptions out of 32 plant species and all the prescriptions are used externally. Plant part used maximum number are leaves (17) followed by bark (08), root (5), whole plant and latex (2 each) and fruit, flower, seed and rhizome (1 each). Out of the plant parts used, paste used for (30 times) followed by powder (9 times), latex (2 times) and pulp (1 time). From the above study, it has been observed that out of 50 prescriptions in 40 cases plant parts are used singly and in 10 cases plant parts are used with other ingredients.

Table 1: List of plants used as ethno medicine for curing of wounds

Sl. No.	Botanical name	Local name	Family	Parts used	Mode of application
1.	*Abrus precatorius* L.	Runja	Fabaceae	Root	Dry root paste is applied on the wound twice daily
2.	*Aloe vera* (L.) Burm	Ghi Kuanri	Asphodelaceae	Leaf	Pulp of the leaf is applied on the Cut part.
3.	*Azadirachta indica* A. Juss	Neem	Meliaceae	Leaf	Leaf paste is applied on the wound daily to cure wound
4.	*Barringtonia acutangula* L.	Hinjala	Lecythidaceae	Bark	Dry bark powder is applied on the cut wound
5.	*Blumea lacera* (Burm. f.) DC.	Poka sungha	Asteraceae	Leaf	Fresh leaf paste is used to cure fresh wound
6.	*Centella asiatica* (L.) Urban	Thalkudi	Apiaceae	Leaf	To cure burn wound or inflamed itching scar leaf paste is applied on the affected area
7.	*Cannabis sativa* L.	Ganjei	Cannabinaceae	Leaf	Fresh leaf extract is applied on the wound part for pain relief and speed recovery

8	*Calotropis gigantea* L.	Arakha	Apocynaceae	Root/ Bark	For snake bite root juice is given orally and bark paste is applied on the wound
9.	*Careya arborea* L.	Kumbhi	Lecythidaceae	Bark/ Flower	Bark paste is applied to cure wound of human and cattle. Flower infusion with honey is given to delivery women for fast curing of wound
10.	*Carica papaya* L.	Amruta bhanda	Caricaceae	Latex of Leaf and stem	Leaf and stem latex is applied on the scabies and eczema
11.	*Colocasia esculenta* L.	Saru	Araceae	Root	Fresh root paste is used to cure wound
12.	*Curculigo orchioides* Gaertn.	Kuakonda	Hypoxidaceae	Leaf	Leaf paste is used for speedy recovery of minor wound
13.	*Curcuma longa* L.	Haladi	Zingiberaceae	Rhizome	Rhizome paste with buffalo ghee is applied on the wound appeared due to oil contact of *Semecarpus anacardium*
14.	*Cynodon dactylon* L.	Duba	Poaceae	Whole plant	To stop bleeding and curing of wound whole plant paste is applied on the affected area
15.	*Datura metel* L.	Dudura	Solanaceae	Leaf	Fresh leaf paste is applied on the cut wound for better recovery
16.	*Dioscorea bulbifera* L.	Pita Alu	Dioscoreaceae	Fruit	Fruit powder is used on the wound daily for good result
17.	*Ficus benghalensis* L.	Bara	Moraceae	Young prop root and latex	Paste of young prop root and latex is used to stop bleeding from wound site
18.	*Ficus religiosa* L.	Aswasta	Moraceae	Leaf/ Bark	Leaf and bark paste are applied to cure of insect bite and burns
19.	*Heliotropium indicum* L.	Hatisundha	Boraginaceae	Leaf	Leaf decoction is used for insect bite
20.	*Hygrophila angustifolia* Auct. Non. R. Br.	Mathamundi	Acanthaceae	Root	Root paste is used on the head scar and wound
21.	*Justicia adhatoda* L.	Basanga	Acanthaceae	Leaf	Dry leaf powder or fresh paste is applied on the wound
22.	*Limonia acidissima* L.	Kaitha	Rutaceae	Bark/ leaf	Bark or bark and leaf paste is applied on wound
23.	*Madhuca indica* Gmel.	Mahula	Sapotaceae	Seed	Oil of the seed is used on the heel crack and minor wound
24.	*Mimosa pudica* L.	Lajakuli	Mimosaceae	Whole plant	Soft paste is applied on the wound twice a day
25.	*Mimusops elengi* L.	Baula	Sapotaceae	Bark/ leaf	Bark and Leaf decoction is applied on the wound for speed recovery
26.	*Ocimum basilicum* L.	Kala tulasi	Lamiaceae	Laef	Leaf extract is used to cure inflamed wound
27.	*Paederia foetida* L.	Gandhili	Rubiaceae	Bark	Bark pest is applied on the wound of the cattle for best result
28.	*Prosopis cineraria* (L.) Druce	Shani	Fabaceae	Leaf	Leaf Juice is used to cure cut wound
29.	*Sida acuta* Burm. f.	Bajramuli	Malvaceae	Leaf	Fresh leaf paste is bandaged to the wound for fast recovery
30.	*Tagetes erecta* L.	Gendu	Asteraceae	Leaf	Leaf juice or leaf paste is used for curing of minor wounds
31.	*Tridax procumbens* L.	Bisalyakarani	Asteraceae	Leaf	To cure a fresh wound, leaf paste is applied on the affected area
32.	*Shorea robusta* Gaertn. f.	Shala	Dipterocarpaceae	Bark	Dry bark powder with coconut oil is applied on the wound part for quick recovery. It has been authenticated by the wound healing activity of ethanolic extract the powdered bark [37].

4. Conclusion

From time immoral, people of various ethnic groups of the Keonjhar district of Odisha have been utilizing various plants and plant products for the treatment of wounds as well as other diseases. People of this region have rich knowledge on traditional medicine especially in folk medicine. The use of medicinal plants and the Indigenous knowledge accumulated by the people of past generation are on the verge of extinction due to habitat destruction of plants because of increasing agriculture, grazing of domestic animals, urbanization and industrialization. Use of medicinal plants as medicine is safe, without side effect and cost effective in comparison to other system of medicine. Documentation and preservation of this indigenous knowledge about the use of plants for the treatment of wounds and other diseases will be much useful for their application in herbal drug industry.

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