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Ethnomedicine used for treating cuts and wounds by the tribes of Attappady, Kerala

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ABSTRACT
The study has been carried out in Attappady, Kerala. There are 3 tribes among which Irular is the dominant in distribution and population. The cuts and wounds are very common in their daily life because of their life activities in inhospitable area. In this survey, 24 ethnomedicines by 26 plants are identified which has been employed by the tribal community for treating cuts and wounds externally. Though cuts and wounds are common, the knowledge and skill for immediate treatment for proper and fast healing is essential for every member of the tribes. Requirement of immediate treatment with easily available medicinal plants makes much more diversity in wound healing medicinal plants. The plants have been enumerated with Botanical names followed by family name, local name, Habit, plant part used and mode of application.

Keywords: Ethnomedicine, Cut and wounds, Wound healing, Tribes, Attappady.

1. Introduction

Traditional folk medical practices are empirical in nature; several million people in India with limited access to organized modern health care centers depend on traditional systems of medicine to cater their primary health care needs. Traditional systems of medicine (Ayurveda, Siddha and Unani) are well established in India and are widely acknowledged to be effective and safe without any side effects [1]. Traditional ethno medicine uses the knowledge, skills and practices based on theories, beliefs and experiences indigenous to its people and culture for maintenance of health. It holds a heritage of communal acceptance and is solely based on the expertise gained by herbalists over a period of time [2, 3]. Ethno-pharmacologists, botanists, microbiologists, and pharma-chemists are to comb in the hunt for novel bioactive compounds "leads" which could be developed as an effective drug for treatment of various infectious diseases [3-5].

Classical management of wounds starts with an aseptic dressing and ends with the rehabilitation of normal structure and function in the affected part of the body. Ethno pharmacological or the plant based traditional therapy not only accelerates the wound healing process but also to maintain the quality and aesthetics during the process of wound healing [6]. More than 70% of wound healing pharma products are of plant based, 20% are mineral based, and the remaining contain animal products as their base material. The plant based materials are used as first aid, antiseptic, coagulants, wound wash (extraction of pus), for infected wounds [7]. However, only few investigations have been made to assess the wound healing properties plants used by tribal people.

Attappady is a tribal pocket in Palakkad district, which lies in the north-eastern part of the State.Though tribesfolk constitute 1.1 percent of the population of the Kerala State, 27 percent of the population in Attappady is tribesfolk comprising Irular, Mudugar, and Kurumbar tribes. Attappady situated in the Palakkad district of Kerala is bordered by Nilgiri district and Coimbatore of Tamil Nadu on its North and east respectively and Malappuram district of Kerala on the west. On its south is the Mannarkkadu taluk of Palakkad district. About 80 percent of the area is under forest (mostly denuded) as against 27 percent of the State. Attappady lies at a height ranging from 450 metres to 2300 metres along mean sea level.

The well-known Silent Valley National park which is a part of Nilgiri Biosphere is sharing boundary with a long distance of Attappady. Close association of National park and its buffer zone could preserve the biodiversity of Attappady. Three major tribal communities are inhabiting in randomly distributed 176 uniethnic tribal hamlet all over Attappady. The predominant tribal community Irular with 119 hamlet comprising 82.2% of the total tribal population. Mudugar with 38 hamlet (10.6% of total population) and Kurumbar with 19

hamlets (7.2% of total population) are the other tribal communities [8].

2. Mterials and methods

Extensive survey cum collection practices were made in the tribal pockets of Attappady. The data presented are based on the first hand information collected during the period of January 2010 to April 2013. The data collected from tribal healers, Herbal medicine practitioners of three tribal communities and Tribal peoples. A political map of the Attappady with the details of tribal inhabited places is collected from AHADS (Attappady Hill Area Development Society). The detailed list of tribal practitioners with address and photographs were also collected from AHADS. Ethno botanical data were collected according to the methodology suggested by Jain and Goel (1995) [9]. Data were collected using questionnaire, interviews and discussions in their local dialect. Traditional medicines used for promoting wound healing were gathered from the folk healers, elderly man and experienced individuals practicing indigenous medicines. Information was considered only after confirmation through two or more informants. Based on the information provided by the tribal, plant specimens were collected, and their identity was established using the Local flora and Botanists [10, 14]. The authenticated herbarium specimens have been deposited in the Herbarium of CMPR, Kottakkal, Kerala. The mode of preparation of drug from plant material and the mode of application for wound healing are also noted down. Each claim was verified 4 or 5 times with different persons from different localities. The tribal or rural names of plants and dose or mode of administration were documented from the field.

3. Results & Discussion

Medicinal plants used in the treatment of wound are listed in the table (Table 1). The plants are arranged in alphabetical order of their botanical names, followed by the family, local name, Habit, Parts used and Mode of Application. In this study, 24 Ethnomedicine with 26 plant species belonging to 19 families have been recorded, 2 of them belongs to Pteridophytes and 3 belongs to Monocots. Wound healing potential of Pteridophyte was reported earlier from the Tribal of Pathanamthitta Dist. of Kerala State [15]. Traditional healers use these plants for healing of cut and wound besides other ailments such as fever, cough, headache, diarrhea, fertility problems, toothache, stomach ache, diabetes, rheumatism, asthma, dysentery, small pox, bone fractures, hair loss and poison (snake, scorpion and insect) bite etc., This information is in agreement with the previous reports [16,17]. Distribution analysis of Plants habit, revealed that maximum remedies were obtained from Herb (11) followed by Shrub (5), Climber (5) and Tree (3) respectively, indicating that more than 45% of the remedies were obtained from the Herbs followed by Shrub 20% , Climber 20% and Tree 13% (Fig.3.). Different parts of medicinal plants viz., root, stem, tender leaf, leaf, flower, fruit, seed, bark and gums were used as source of medicine by the local traditional healers. Distribution analysis of plant parts used as source of wound healing bioactive principle revealed that plant parts viz., Tender leaf(11), Fruit (2), Leaf (7), Root (2), Tender Shoot (1), Bark (2), Dried shoot (1), Whole plant(1) and Gum(1). Percentage analysis of the plant part used were in following order Tender leaf (45%) > Leaf (29%) > Root (8%) = Fruit (8%) = Bark (8%) > Whole plant (4%) = Tender Shoot (4%) (Fig.4). Further, most of the remedies for wound healing were obtained from the tender leaves followed by leaves. Maximum numbers of remedies used for wound healing were used as external applicants, only few were taken orally. Most of the remedies used for wound healing were prepared from single plant. Sometimes combination of two parts of the same plant or parts from two or more plants has been reported. Method of preparation and administration of medicine varied significantly depending on the plant species and plant part used. Most of the formulations used were in the form of paste by grinding the plant material. These analysis are closely correlating the earlier report of ethnomedicinal survey conducted in the Malayali Tribes of Vattal Hills, Dharmapuri, TN, India [17]. Simultaneously different parts of a plant are used for wound healing with different mode of preparation. Rarely, animal products such as urine were used as an ingredient in the preparation for external application. Alternatively, juice extracted from fresh plant material or powder form dry plant material was also used. The preparation of natural remedies for wound healing is broadly classified into four categories, a) plant part/s applied as a paste. b) Juice extracted from the fresh plant materials, c) powder made from dried plant materials, d) gum obtained from fresh plant materials. External applications along with the internal consumption of the preparations were also used to enhance the process of wound healing. But only the plants used for external application are described here. Traditional healers more frequently use the plants that are available at the time of cut and wounds to treat, thus more number of plants were invariably used for same property as an alternative source.

3.1. Tables and Figures

S. No	Botanical Name	Vernacular Name	Habit	Parts Used	Mode of Administration
1	*Acalypha fruticosa* Forssk., Euphorbiaceae	Balamunja Chini Kuppameni	Shrub	Leaves	The leaves are ground into a paste and smeared over wounds
2	*Ageratum conyzoides* L., Asteraceae	Appachedi	Herb	Tender leaves	Tender leaves crushed in to paste and applied over the for speedy healing.
				Leaves	Leaves crushed with equal

					quantities of appachedi (*Chromolaena odorata* (L.) King & Robins.,) and the juice is applied several times over all types of wound forfast healing.
3	*Andrographis paniculata* (Burm. f.) Wall. ex Nees Acanthaceae	Kiriyath	Herb	Leaf	Leaf paste is smeared over the wound.
4	*Aristolochia indica* L., Aristolocaceae	Irukodi Karlakam	Climber	Leaf	The leaf paste is applied over wounds and swelling Juice from the leaf paste applied over the wound for speedy healing.
5	*Asparagus racemosus* Willd., Liliaceae	Tinampori, Chatavalli	Climber	Leaf	Apply the leaf paste externally over deep wounds for speedy healing.
6	*Bambusa bambos* (L.) Poaceae	Mula, Pattil	Shrub	Bark	The peeling of bark along with salt is ground into a paste, mixed with coconut oil and smeared over the affected area.
7	*Boerhavia diffusa* L., Nyctaginaceae	Serende	Herb	Root	Root paste externally applied over the wounds for healing without infection.
8	*Calycopteris floribunda* (Roxb)Lam., Combretaceae	Pullanni Pullanji Varavalli	Climber	tender leaves	Juice from tender leaves of the plant is smeared over wound for healing.
9	*Celastrus paniculatus* Willd., Celastaceae	Kangoge chedi	Climber	Tender leaf	Tender leaf juice is applied over the wound for healing.
10	*Chromolaena odorata* (L.) R. M. King& H.Robins., Asteraceae	Communist Pacha	Shrub	Tender leaves	Tender leaves crushed into paste and juice with crushed leaf mass covered over the wound make heeling

					fast.
11	*Clerodendrum infortunatum* L., Verbenaceae	Peruku perukila	Shrub to Small Tree	Tender leaves	Tender leaves crushed to paste applied on wounds
					Tender leaves crushed with lime($Ca(OH)_2$) and applied over wound
12	*Eleusine coracana* (L.) Gaertn., Poaceae	Kora Muthari Ragi	Herb	Fruits	Fruits are fried and powdered, mixed with coconut oil and applied over wounds for speedy healing. The wounds are not to be washed till they healed.
13	*Emilia sonchifolia* (L.) DC., Asteraceae	Elichevianveru Muyalchevian	Herb	Tender leaves	Tender leaves crushed and paste is applied on wound
14	*Equisetum ramosissimum* Desf., Equisetaceae	Sornappanna	Herb	Dried shoots	Dried shoots are powdered and applied over the wounds for speedy healing.
15	*Hemigraphis colorata* Hallier f., Acanthaceae	Murikootti	Herb	tender leaves	Leaves, especially tender leaves made into paste and juice is applied over wound for healing.
16	*Lantana camara* L., Verbinaceaea	Aripoochedi odichuthi	Shrub	Tender parts of the plant	Tender parts of the plant crushed and made into paste and apply over the wound for speedy healing.
					Tender parts of the plant crushed with culm sheath of bamboo and applied over wound.
17	*Leucas aspera* (Willd.) Linn., Lamiaceae	Thumba Chiru thumba	Herb	Leaf	Juice from the leaf paste is applied on wound.
					The leaf juice is mixed with common salt and applied over ulcers and wound.
18	*Macaranga peltata* (Roxb.) Muller.,	Malavetta Puthatamara	Tree	Fresh gum	Gum from stem bark applied on

	Euphorbiaceae	Uppotti Vatta Vattakkanni			the mouth of cut and wounds to stop bleeding.
				Tender leaf	Tender leaf paste is applied over wound for healing.
19	*Piper betle* L., Piperaceae	Vettilakodi	Climber	Leaf	Mixed paste is applied over wound for healing
	Areca catechu L., Arecaceae	Pakku	Tree	Fruit	
	Nicotiana tobacum L., Solanaceae	Pukayila	Shrub	Leaf	
20.	*Plumbago zeylanica* L., Plumbaginaceae	Otte Kotuveli	Shrub	Root Leaves	A small piece of root and one or two leaves of *P.zeylanica* with garlic are ground in one's own urine and made to a watery paste.
21	*Pterospermum rubiginosum* Heyne ex Wight & Arn., Sterculiaceae	Ellotti	Tree	Bark	Bark after removing outer dead layer is dried and powdered and sprinkled over the wound.
22	*Selaginella delicatula* (Desv. ex Poir.) Alston. Selaginellaceae	Kuruvevannasappu	Herb-Terrestrial/ Epiphytic	Whole plant	Whole plant is grind with *Spermacocae hispida* and the paste is applied on wound. (a decoction is made in water is also administerd for wound.
23	*Spermacoce articularis* L. f., Rubiacea***e***	Kudalurukki, Kudalchurukki	Herb	Tender leaf	Tender leaf paste applied over wound healing.
24	*Tridax procumbens* L., Asteraceae	Adathodappan chedi, Pukavetti	Herb	Tender leaves	Tender leaves crushed into paste and applied over wound for healing.

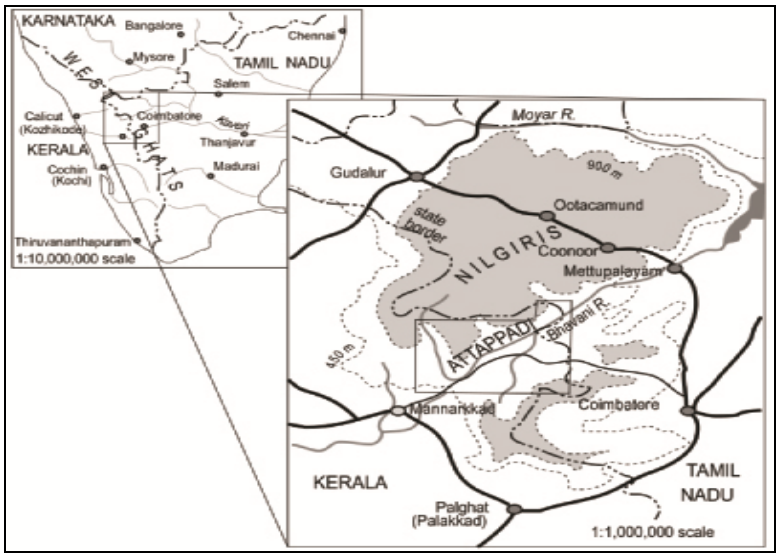

Fig 1: Geographic location of the study area [18]

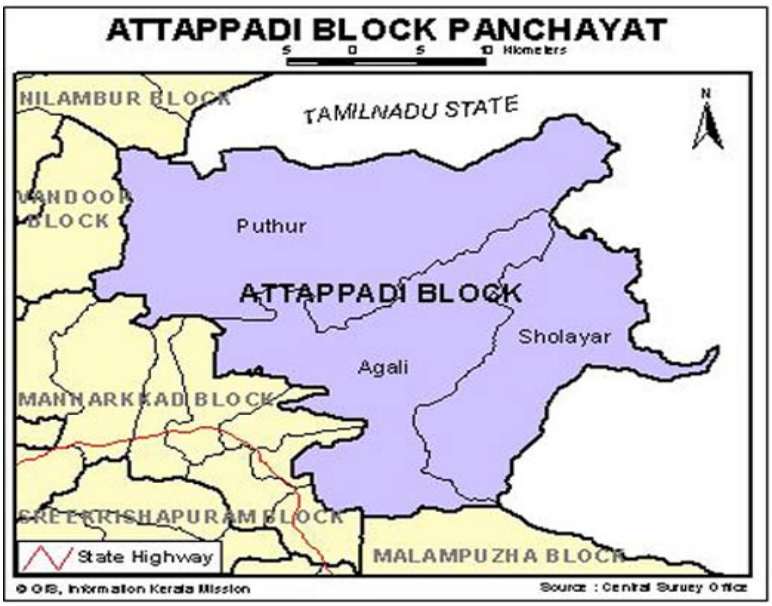

Fig 2: Political Map of Attappady.

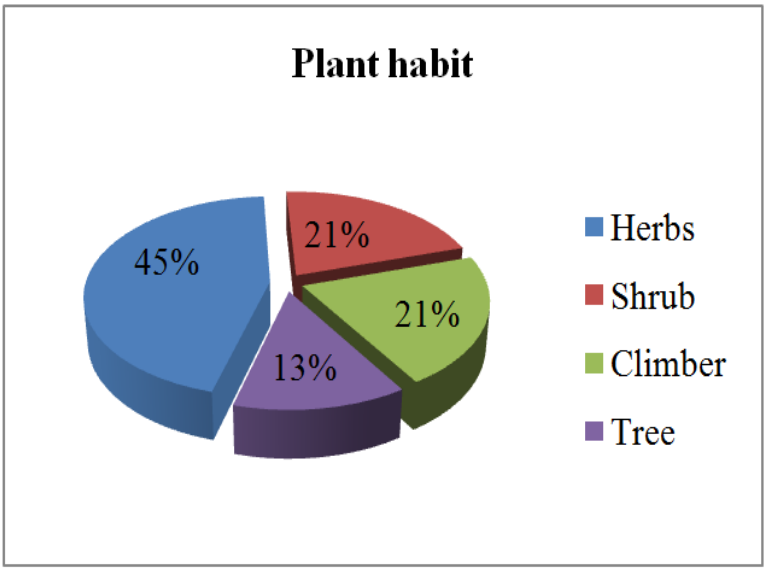

Fig 3: Percentage Distribution of plant habit

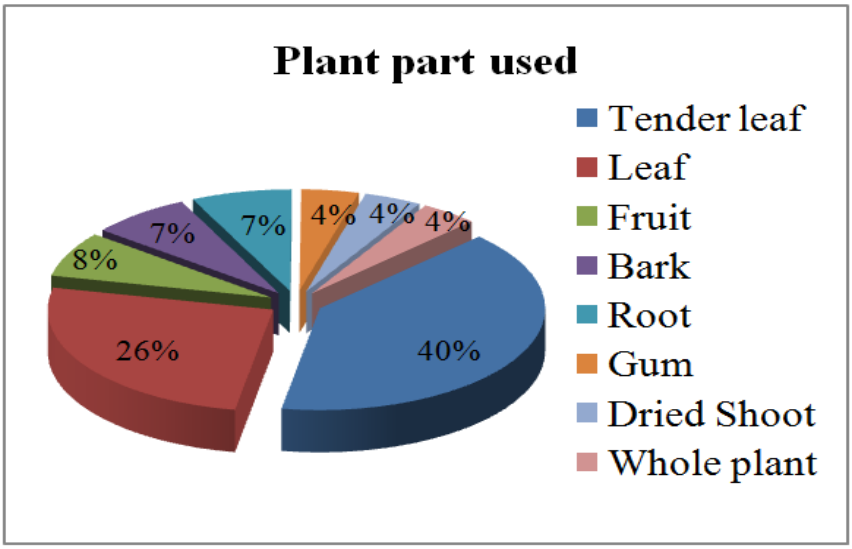

Fig 4: Percentage Distribution of Plant part used

4. Conclusions

The survey indicates that, the study area Attappady has a plenty of medicinal plants can be used as natural remedies for many diseases. Lack of modern health care facilities and poor transportation facilities along with strong socio-cultural belief in Tribal settlements of Attappady made their life tight binds with tribal medical treatments. But the knowledge of plants and its usage is limited to elderly Vaidhiyars and Moopans. Interestingly, the deep cuts and wounds are very common in tribal life, none of them become chronic or ulcer. Even in the absence of proper dressing or modern treatment, the fast healing of cut / wound without any complication is absolutely amazing. It shows the effective wound healing potential of Ethnomedicine used by the tribes. But, It is very unfortunate that the younger generation is not interested in learning the tribal medical treatments, so there is a high risk of diminishing this ethno medicinal knowledge in the near future. This rapidly vanishing cultural as well as biological diversity needs to be studied and documented before it disappears. Researches carried out in this direction confirmed that herbal claims of traditional practitioners can serve effective and inexpensive remedies for many diseases. This indicates that the formulation and preparations of herbal medicines in their natural and semi processed forms used in folk healing are need to be documented and pharmacologically evaluated for our immediate health care requirements.

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