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Ethnomedicinal plants used by tribal healers of Purulia as a remedy for arthritis: A preliminary survey

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Abstract

Arthritis is a chronic systemic inflammatory disease which is due to disorder of the immune system and can cause restricted mobility and death. Lack of effective treatment in remote areas results in financial burden and long-term expensive medication. Traditionally people living in remote areas depends on herbal resources for their livelihood. These suppositories are often used singly or in combination which are prescribed by village elderly or quacks and lacks the scientific basis. In the present survey which spanned for almost six months, we encountered 40 species of plant which were commonly used for treatment of arthritis. These surveys would help us to know the traditional knowledge which would lead to the development of ethno-botanic resources for inexpensive drugs for the treatment of arthritis and their scientific validation.

Keywords: Arthritis, survey, complementary and alternative medicine, NSAID

Introduction

Rheumatic diseases are a grave health problem affecting millions of people worldwide resulting in rising health-care costs [1-3]. It affects approximately 1% of the world population, which is more common in women between 40 and 60 years than in men [4-6]. Arthritis involves the breakdown of cartilage which protects a joint, allowing it to move freely. The process produces an inflammatory response of the synovial (sinusitis), excess synovial fluid which reduces loss of daily activities and decreases in quality of life [7, 8]. It is well known that Pro-inflammatory cytokines such as tum or necrosis factor- α (TNF- α), interleukin (IL)-1 β , and IL-6 play important part in disease perpetuation. Medications are prescribed which are mostly of long term use along with lifestyle changes. Mostly Nonsteroidal anti-inflammatory drugs (NSAIDs), Disease-modifying anti-rheumatic drugs (DMARDs) and some biological agents such as (TNF blockers, Rituxan, Remicade) are prescribed and in excessive cases surgery is often advised. Most of the drugs which are prescribed for long term use are expensive and have ill effects of their own and which are not affordable by people coming from low socioeconomic status and living in remote areas. Therefore, they primarily depend on plants and plant products for treatment of their disease. Now a day's urban population are also disappointed with the orthodox mode of treatment regimen and are shifting to complementary and alternative form of treatment such as homeopathy, acupuncture, ayurvedic and unani medicines.

The Purulia district of the state West Bengal is a natural abode of large number of treasured medicinal plants which is a part of Chota Nagpur plateau and lies close to the state of Jharkhand. The remoteness and secluded living of the tribal people in this district resulted into the development of their own medico-religious health care system and using it in their own way which was mainly based on trial and error basis. It is unfortunate that their traditional information has not been properly identified, standardized neither documented for the improved use by modern society. Therefore, the present study was undertaken to survey the remote villages of Purulia district of West Bengal to gather knowledge about medicinal plants which have been used for treatment of arthritis and to validate their therapeutic uses with proper knowledge. The eventual motto of this investigation was not limited in just generating a database for future study but also providing the justified information to the masses for the well-being of the humanity. Collection of specimens during the survey tours acts as the reference materials for description and characterization of raw drugs and their botanical source, Collection of Folk-Medicinal claims and information on local health tradition (LHT) from the area visited during the tours provide the lead for validation and effective development of drugs, identification of plants or plant parts associated with the Folk-Claims and their preservation.

Method of collection of information

The ethnobotanical study was carried out as a field survey in 6 villages of Purulia district of West Bengal primarily during the period of June 2018 to December 2018. The data were collected through general conversations with the village people in general and were verified, precised and summarized by the village elderly, quacks and also with the common tribal. Data collection was done through interviews and discussion with elderly people comprising both male and female members and tribal practitioners or quacks. These tribal people/villagers have limited access to dispensaries and hospital because they live in remote and isolated areas, hence predominantly depend on the elderly persons and quacks for their primary medication. Additional information regarding the dosage, part of the plants used, whether they are used alone or in combination with other plants, form in which they are advised to administer were also recorded. In this regard the help of the villagers and the physician or the Baidya (vernacular designation of the physician) were taken in the identification of the plant. The persons mostly above the age of 60 have accurate information regarding their old traditions though initially they are reluctant to divulge the information,

once convinced they gave the information slowly.

Generally two types of interviews were taken, firstly of individuals and secondly of groups. Of individuals, persons were selected at random on the way after taking the consent of the village headman. In group interviews more than one individual were approached, our purpose explained and interviews taken. They were also requested to collect specimens of the plants they knew.

Results

During our survey we found that tribal medicine men or quacks were initially hesitant to share their knowledge about these medicines. They have a belief that if they reveal the distinctiveness of the plant then it would lose its pharmacological potential. Hence, we have to approach them frequently and gather their confidence. Further, these tribal medicine men neither reveal the identity of the plants to the patients or to their descendants because they feel a professional competitor would harm his identity, status and recognition in the adjacent areas. Table 1 enlists some plants which are used for treatment of arthritis along with their local name and the parts which are used.

Table 1: List of plants which are used by tribes along with their family, local name and the parts used.

S. No.	Botanical Name	Family	Local name	Parts Use
1.	<i>Acanthus ilicifolius</i>	Acanthaceae	Hargoza, Goza	Leave paste
2.	<i>Adansonia digitata</i>	Bombaceae	Gorakh-amli	Leaves
3.	<i>Allophylus cobbe</i>	Sapindaceae	Rakhal phul	Leaves
4.	<i>Alpinia golonga</i>	Zingiberaceae	Kulanjan	Rhizome
5.	<i>Anacardium occidentale</i>	Anacardiaceae	Kajubadam	Fruits
6.	<i>Aphanamix polystachya</i>	Meliaceae	Tikatarai	Bark,
7.	<i>Argyreia nervosa</i>	Convulaceae	Bijtarak, Dholsumudra	Root
8.	<i>Artemisia absinthium</i>	Asteraceae	Mastaru	Whole plant
9.	<i>Calophyllum inophyllum</i>	Clusiaceae	Kathchampa	Seed extract
10.	<i>Citrus limon</i>	Rutaceae	Gonra Lebu, Jamir	Fruits
11.	<i>Coldenia procumbens</i>	Boraginaceae	Tripakhi	Leaves
12.	<i>Crataeva roxburghii</i>	Capparidaceae	Barun	Leaves
13.	<i>Cymbopogon flexuosus</i>	Graminae	Gondhobena	Leaves
14.	<i>Dipterocarpus indicus</i>	Dipterocarpaceae	Garjan	Bark
15.	<i>Echinochloa frumentacea</i>	Poaceae	Shyama	Whole plant
16.	<i>Elaeocarpus serraters</i>	Poaceae	Bonjalpari	Leaves
17.	<i>Erythrina suberosa</i>	Papilionaceae	Piri, Pangra	Leaves
18.	<i>Euphorbia nivula</i>	Euphorbiaceae	Sij	Leaves
19.	<i>Gmelina arborea</i>	Verbenaceae	Gamari	Leaves, Roots
20.	<i>Hedychium coronarium</i>	Zingiberaceae	Dolan champa	Roots, Rhizome
21.	<i>Hiptage benghalensis</i>	Malpighiaceae	Madhabilata	Whole plant, Leaves
22.	<i>Ipomoea pes</i>	Convulaceae	Chagalkhuri	Roots and leaves
23.	<i>Lasia spinosa</i>	Araceae	Kantakachu	Whole plant
24.	<i>Leucas cephalotes</i>	Lamiaceae	Barahaltusa	Leaf, Stem
25.	<i>Litchi chinensis</i>	Sapindaceae	Lichu	Seeds
26.	<i>Melaleuca leucadendros</i>	Myrtaceae	Kajaputi	Bark
27.	<i>Moringa oliefera</i>	Moringaceae	Sajne, Sajina	Seeds and Roots
28.	<i>Nyctanthes arbor</i>	Nyctanthaceae	Harsinghar	Leaf
29.	<i>Ocimum viridae</i>	Labiatae	Ram Tulsi	Whole plant
30.	<i>Paederia scandens</i>	Rubiaceae	Gandho badulia	Stem, root
31.	<i>Piper betle</i>	Piperaceae	Pan, Tambul	Whole plant, root
32.	<i>Plumeria rubra</i>	Apocynaceae	Lal Garur	Leaf Latex, Stem
33.	<i>Pogostemon heyneanus</i>	Labiatae	Pochapat	Root, Leaf
34.	<i>Premna obtusifolia</i>	Verbenaceae	Agnimantha	Whole plant
35.	<i>Rhaphidophora partusa</i>	Araceae	Gajpeepal	Roots, leaves and fruits
36.	<i>Siegesbeckia orientalis</i>	Asteraceae	Dude jhar	Whole plant
37.	<i>Spondias pinnata</i>	Anacardiaceae	Aamda	Bark, fruit
38.	<i>Toddalia asiatica</i>	Ruta	Kadatol, Dahan	Fruit
39.	<i>Trewia nudiflora</i>	Euphorbiaceae	Pitali, Gambhar	Root
40.	<i>Vanda roxburghii</i>	Orchidiaceae	Rosna	Root

Results and Discussion

During our study we found that tribal medicine men or quacks were reluctant to share their knowledge about these medicines. Further, they never reveal the identity of the plants to the patients or to their descendants because they feel a professional competitor would harm his identity, status and recognition in the adjacent areas. We have to assure them that we are not prescribing these plants for remediation against various ailments but only for research we have approached them. We came across several people who spend much of their time in forest to collect woods, grazing and cultivation. The data that has been accumulated from various surveys will help in preserving folk indigenous knowledge as well as discovery of potential compounds having promising anti-arthritic activity. Further, the existing knowledge on traditional uses of plants are on fast diminishing because lack of responsiveness of local youth to learn the traditional knowledge from the old herbal therapist. The management of arthritis is a multidisciplinary method in order to lessen the pain, reduction of inflammation and restoration of joints function. In practical terms suppression of inflammation is target intensive remedy but the orthodox medicines have cytotoxic effects. Therefore, herbal medicines have become popular for the treatment of rheumatoid arthritis worldwide recently. There are several reports that flavonoids are increasingly used in treatment of inflammation^[8]. It has been reported by others that seeds of *Nigella sativa* fixed oil are used to treat rheumatoid arthritis^[9-10]. On the other hand, curcumin has also been effective in the management of rheumatoid arthritis^[11]. There are reports that aromatherapy massage with lavender essential oil reduces pain in patients suffering from osteoarthritis^[12]. Further, works are in progress worldwide to ascertain its biological activity and brighten the pharmacological profile of it in the arena of traditional medicine both in *in vivo* and *in vitro* studies^[13-15]. Meanwhile folk healers harvest roots, barks and leave of these medicinal plants, there is needed to educate them about the approaching risk of constant over-exploitation of these plants. Further research is also desired to survey more plants in this area and isolate the bio-active chemical compounds from plants for drug development.

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