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***Dodonaea viscosa* Linn used disease by Irula tribes Kanchipuram District Tamil Nadu, India**

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ABSTRACT

India is known for its rich flora and fauna, diverse climatic areas and wealth of living ethno medicinal plant using the tradition. The paper enumerates medicinal plants used by Irula tribes Kanchipuram district, Tamil Nadu. The traditional practises of three medicinal plants belonging to three families are obtainable with botanical name, family, local name, parts used, method of groundwork and ethno pharmaceutical uses. Medicinal plants were the richest source of India with many traditional uses. Numerous of the pharmacological and pharmacognostical studies of the medicinal plants shown their active application in the field of medicine as they possess certain nutrient and non-nutrient substances that protects and precludes the body from many diseases. They attain a great helpfulness in the present world due to the side effects of the manmade drugs on the human life. *Dodonaea viscosa* Linn. is an evergreen woody perennial shrub with a native of Australia, indigenous and was later wide spread throughout the region of tropics. Various plant parts such as stem, leaves, seeds, roots, bark and aerial parts were used as the antibacterial, analgesic antiviral, anti-inflammatory, antiulcer and antioxidant agent in traditional system of medicine.

Keywords: *Dodonaea viscosa*, traditional medicine, Irula tribes

1. INTRODUCTION

The study of local knowledge about usual possessions is becoming gradually significant in essential stratagems and arrangements for preservation. In recent years, work in ethnobotanical information worldwide has increased especially in some parts of Europe, Asia, and Africa. India, a country with of the world's ethnobotanical work. There are no earlier reports on the documentation of Botanical Survey of medicinal plants in India is one of the twelve mega-biodiversity countries of the World having rich flora with a wide variety of plants needing medicinal value. Human development has evolved as a result of interaction of people with their setting, especially with floras. From the very earliest days of development, mankind has turned to plants for healing, a tradition that has survived the arrival of modern medication and found new strength at the end of 20th century (Pandi Kumar et al., 2007: Sullivan K & Shealy et al., 1997).

India accounts for 7-8% of the recorded species of the world. The Botanical a rich culture and traditional knowledge, has contributed a major share Survey of India has recorded over 47,000 species of plants. About 64% of the total global population remains dependent on traditional medicine for their healthcare system (Farnsworth et al., 1994: Pandi Kumar et al., 2007). Traditional knowledge is generally associated with biological resources and is invariably an intangible component of such a biological resource. Historically, the tribal communities survived on their traditional knowledge base. Maintenance of their health even now is based on traditional medicine derived from plants and other natural products (Tripathi et al., 2003: Pandi Kumar et al., 2007).

Relevant information on ethno-medicine of the area has been collected from the elderly persons of the tribal community the alayalis residing in these villages. (Rajadurai et al., 2009) The accumulated in the course of many centuries based on traditional healers are dwindling in number and there is different medicinal systems in India, The present study was undertaken to explore the way of accumulation of rich knowledge of medicinal plant use for various disease and disorders by plants and usage of other natural resources among them gathering knowledge from the Irula and Malayali tribes (Anusha Bhaskar et al., 2012)

2. MATERIALS AND METHODS

Study area this study was considered to study and document the traditional and Indigenous knowledge of the Irular tribe's community of the Kanchipuram district in Tamil Nadu. During the study, many field trips were carried out in the study area from 2016 - 2017. Standard methodology was used to gather the ethnomedicinal knowledge of plant from the local people (Jain et al., 1967).

The information regarding the medicinal uses of plants, perception of the local people regarding use of plants in rheumatism diseases were composed through questionnaires among the tribal practitioners in the reading area. In gathering to the vernacular names, evidence on plant parts used, uses, mode of preparation; form of usage and mixtures of other plants used as ingredients were also collected. The collected plant species were identified taxonomically (Gamble and Fischer, 1957: Matthew, 1987). The identified plant samplings were confirmed with the herbaria of Botanical Survey of India (BSI).

3. IRULAR TRIBES

Irular Tribes The Irular are a tribe of around 1,50,000 people and are categorized as "backward caste," or "B.C." for short. They are the lowest of the low and the poorest of the poor in Indian society, with little means at their disposal of enforcing their rights, despite the fact that they live in the world's largest functioning democracy. The Irular inhabit the northern districts of Tamil Nadu, a state in south-eastern India. Located not far from the city of Madras, they live in a tropical area subject to monsoon rains. Their language, Irular, is related to Tamil and Kannada and, in the Tamil language, the name Irula means "people of darkness." This could refer to their dark-coloured skin or to the fact that all important events traditionally took place in the darkness of night. Irula houses are built together in small settlements or villages called mottas.



Fig. 1. *Dodonaea viscosa* Linn



Fig. 2. *Dodonaea viscosa* Linn

The mottas are usually situated on the edges of steep hills and are surrounded by a few dry fields, gardens, and forests or plantations. The typical house consists of only one room with an earthen floor, thatched roof, and a front porch. Less traditional houses have tile roofs and stone walls. The people sleep on mats, which they roll up and store in a corner during the day. They always wash their feet before going inside the house, where usually only family members and relatives are allowed (Singe, 2010).

4. RESULT AND DISCUSSION

The result of this study has revealed 3 plant species belonging to 3 families that are used for various purposes by herbalists, traditional healers and tribal people of Block. All these medicinal plant species collected by local communities from the surrounding areas, forests and alpine meadows and used them as remedies for various ailments. Methods of using these plants vary according to the nature of diseases and knowledge of individuals. The methods of preparation categorized into six categories. The plant parts applied as a paste, boiled, decoction, juice extracted from the fresh plant parts, powder made from dried plant parts, others. Paste is the main methods of preparation, either for oral for external administration. The inhabitants in the villages of use a number of medicinal plants for the treatment of various diseases.

4. 1. Medicinal uses

Dodonaea viscosa Jacq is a traditional medicine and is utilized in the folklores medicine in sub tropic regions of Pakistan for the treatment of various fungal skin diseases like *Tinea capitis*, *Tinea pedis*, *Tinea manum*, and *Tinea corporis* etc.

The powdered leaves of *Dodonaea viscosa* applied over a wound in case of burns and scalds was found to possess febrifuge properties and hence useful for the remedy of different skin diseases.

The *Dodonaea viscosa* plays an efficient role in inhibiting the adherence of *Candida albicans* to oral epithelial cells, preventing the initial step of colonization in the process of infection and this plant has a very high therapeutic potential at subinhibitory concentration (Pirzada et al ., 2010).

A Traditional use of the plant as an antispasmodic, an anti-inflammatory (roots), an antipyretic and an antimicrobial agent has been reported. Useful compounds and classes of constituents like Flavonoids, terpenes, coumarins and steroids are isolated from this species (Khalil and Sperotto, 2006). *D. viscosa* is used for the treatment of rheumatism, skin infections, diarrhea, stomachaches, pains of hepatic or splenic origin, uterine colic and other disorders involving smooth muscles.

It is also used as an antipuritic in skin rashes and for the treatment of sore throat, dermatitis and Hemorrhoids (Pirzada et al., 2010). *Dodonaea viscosa* Linn.is a stiff bushy plant which is used by Muthuvan tribes and Tamil Nadu native who reside in the Shola forest regions of Kerala for headaches and backaches. This is commonly known as ‘virali’. Water boiled with leaves is used to foment swellings, backaches and used for steam inhalation in cough and colds. *Dodonaea viscosa* is used for stomach pain and piles. It is also used to heal simple ulcer.

The *Dodonaea viscosa* has been reported to have anti-inflammatory and antimicrobial activity. It has been also reported to have local anesthetic and smooth muscle relaxant activity (Arun and Asha, 2008:).

4. 2. Antimicrobial

The antimicrobial activity of aqueous, methanol, ethanol and ethyl acetate leaf extracts of *Dodonaea viscosa* varangustifolia, were tested against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans* and *Mycobacterium smegmatis*. Better activity was observed in the liquid dilution assay with all extracts, the ethanolic and methanolic extracts of *D. viscosa* showed good inhibition against *S. aureus*, *M. smegmalis* with minimum inhibitory concentration (MIC) value of 2.5 mg/ml and 1.25 mg/ml respectively in the bioassay. In disc diffusion study ethanolic extract of *D. viscosa* showed inhibition against candida albicans. (Ramzi et al., 2008; Thring et al., 2007; Getie et al., 2003).

4. 3. Antifungal Activity

Dodonaea viscosa was originate to be more significant and efficiently suppressed the radial mycelial development of the *Alternaria solani* and *Rhizoctonia solani*. The radial mycelial growth % was greatly inhibited by Alternariasolani which was exhibited by *Dodonaea viscosa* (56.96%) and *Macrophomina phasiolina* was exhibited by *Dodonaea viscosa* (52.06%). Solvent extracts of leaves and shoot of *Dodonaea viscosa* Jacq have showed antimicrobial activity against fungi, *Aspergillus niger*, *Aspergillus flavus*,

Paecilomyces varioti, *Microsporum gypseum*, and *Trichophyton rubrum* causing skin diseases. All crude extracts were found to be effective against tested fungi. It was found that chloroform has strong inhibition activity (50-90.91%) against fungi when compared to ethanol, methanol, ethylacetate and aqueous extracts (Pirzada et al., 2010; Devi Rajeswari et al., 2011).

The crude extract *Dodonaea viscosa* leaves possess antibacterial activity against *Streptococcus pyogenes* and *Staphylococcus aureus* and strong activity against Coxsackie virus B3 and influenza A virus (Getiea et al., 2003; Devi Rajeswari et al., 2011).

4. 4. Anti-Diabetic Activity

Diabetes mellitus is a major disease which shows the characterization of the derangement in carbohydrate, fat and protein metabolism, thereby affecting nearly 10% of the entire population. Many hypoglycemic agents are introduced in the recent years, yet the diabetes and its related complications is a major threat among population causing many medical problems not only in developed countries but also in developing countries. Glucose tolerance test was made in rats and alloxan induced diabetics rats with the different extracts of the *Dodonaea viscosa* (L).

To determine its anti-diabetic activity. Extracts of aqueous ethanol and butanol showed the significant protection and was found to lower the blood glucose levels to normal when glucose tolerance test is done. The maximum reduction in blood glucose level of alloxan induced diabetic rats was observed after 3h at a dose level of 250 mg/kg of body weight. The percentage protections given by aqueous ethanol and butanol extracts were found to be 30 and 48% respectively. There was a significant antidiabetic activity in both the extracts when compared to that of glibenclamide. The study indicates that there is a significant anti-diabetic activity in *Dodonaea viscosa* (L) extracts. Thus it is confirmed that according to the traditional Indian systems of medicine, the root juice of this plant can be used in the treatment of diabetes. (Arun and Asha, 2008; Devi Rajeswari et al., 2011).

The indigenous knowledge about medicinal plants and therapies was composed verbally and passed orally from generation to generation. They fear that their recognition in the society which they have earned due to their knowledge will be lost and hence they want to keep it secret. The secrecy of traditional medical practice is also a common phenomenon found in other part of Haryana (Sharma et al., 1992), India (Upadhyay et al., 2007) and worldwide (Giday et al., 2009 and Ayyanar et al., 2005; Panneer Selvam et al., 2016).

Similarly the threat to traditional knowledge also observed treatment in other parts of India due to less interest of the younger generation (Muthu et al., 2006). Now the herbal medicine is a recognized system of medicine throughout the World. For centuries, plants with medicinal properties have been utilized successfully in the treatment of ailments of varying degrees of severity.

The leaves are most frequently used for the of diseases. External applications and internal consumption are involved in the treatment of wounds, snake bite; headache and skin diseases (Nithyadevi and Shivaanant, 2015; Panneer Selvam et al., 2016). Largest numbers of remedies are digestive problems followed by respiratory disorders, skin diseases, wound healing, genital disorders, snake bite and diabetes (Kausik Mondal et al., 2015; Panneer Selvam et al., 2016).

5. CONCLUSIONS

People used these medicinal plants for the treatment of various diseases like cold, cough, arthritis, body pain, diabetic, hair problem, stomach problem, genital disorders. It can be concluded from the study, these result forms a good basis for selection of potential plant species for further phytochemical and pharmacological investigation (Panneer Selvam et al., 2016).

Ethno medicinal studies on the plants have attained a great interest in the present world due to their application in the medicinal field .The products obtained were of natural origin and hence do not contain any additional chemical substances which causes a harmful effect on the human beings. *Dodonaea viscosa* is one among the medicinal plant with many pharmacological activities that makes it as a potent species among all. The research studies conducted on this plant were very few and yet to be done .So far, only the antimicrobial, anti-inflammatory, anti-ulcer, wound healing, local anesthetic, smooth muscle relaxant, allelopathic potential, gastro protective effect and antioxidant activities were revealed by the experimental studies. Still, many research works has to be carried out in the above plant in order to explore its pharmacological potential. The Medicinal plants were the richest source of India. Hence, the exploration of its actual usage in the pharmaceutical field would be helpful to discover the new drugs that were of natural origin with little or no side effects. Hence, this review was aimed to bring about the research studies done with the above plant and to remark its potential application in the day to day life.

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Table 1. Showing the list of medicinal plants and their use, mode of consumption by the Irular tribes of Kanchipuram district, Tamil Nadu

Sl. No	Botanical name	Family	Local name	Parts used	Method of preparation and uses	Ref.
1.	<i>Tephrosia purpurea</i> L. Pers.	Fabaceae	Kolingi	Root	Root paste used as leprosy, ulcers, asthma, diarrhea, rheumatism and stop bleeding.	Panneer Selvam et al., 2016
2.	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkathhan	Whole plant	Arthritis in bovine, ovine and caprine to cure skin diseases, the stem good for tooth which used as a tooth fresh.	Santhivi malarani et al., 2014
3.	<i>Dodonaea viscosa</i>	Sapindaceae	virali		D. viscosa is used for the treatment of rheumatism, skin infections, diarrhea, stomachaches, pains of hepatic or splenic origin, uterine colic and other disorders involving smooth muscles .It is also used as an antipuritic in skin rashes and for the treatment of sore throat, dermatitis and Hemorrhoids	Study Sample

Table 2. The populations under investigation are explained in the following

S. No	Name of the tribal populations	Location	Language	Population level (2011 census) for Tamil Nadu, India	Occupation	Racial classification
1	Irular	13 Districts , Tamil Nadu	Tamil and Irular Language	1,89,661	Hunter-gatherer, Now mortally Irular are working as bonded labours and agricultural labourers.	Negritoes, Proto – Australoid, and Australoid.