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An Ethnobotanical Survey of Antidiabetic plants used by tribes of Warangal District, Telangana State

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Abstract

India is well known for its great heritage of herbal medicinal knowledge. Large number of tribals and ethnic people living in the remote forest areas depend on plants to a great extent for foods, medicine, pharmaceuticals and agrochemicals. From the decades studies on ethnobotany have gained importance. Diabetes is an important chronic disorder afflicting many from various walks of life around the world. Though they are various allopathic drugs used to treat the worse effects of diabetes, herbal formulations are preferred to minimize the risk of side effects and due to low cost. Therefore, in the present study an ethnobotanical survey has been carried out in the medaram region by undergoing discussions with the local traditional practitioners. The present paper aims to list out the plant species used by the traditional healers of Medaram region to cure diabetes mellitus and its complications.

Keywords: Ethnomedicine, Diabetes, Tribal people, Medaram.

INTRODUCTION

Diabetes mellitus commonly known as diabetes, a metabolic disorder caused due to high sugar levels over a prolonged period. Diabetes is caused due to lack of insulin or destruction of cells responding to the insulin. Acute symptoms of diabetes include increased feeling of hunger, rapid thirst, repeated urination and ketoacidosis. Thus these untreated can lead to chronic complications such as kidney failure, heart disease, ulcers and damage to eyes (WHO October 2013*).

Over world wide as of 2014, an estimation of 387 million people are suffering with diabetes. Of that 90% of cases are affected with type2 diabetes (George 2014). Diabetes mellitus is a rapidly growing medical problem has become a serious threat to mankind health in all parts of the world. In India, especially in the urban areas it is emerging as a major health problem and it has approx. 18 million diabetic population.

According to WHO's estimation 80% of the world's population use herbal medicine. Now a days traditional medicine with good clinical practice is showing a lively future in treating diabetes and its complications (Shokeen et al., 2008) From the decades vigorous research on ethnobotany shows that plant and its derivatives are useful in the treatment of diabetes mellitus (Yeh et al., 2003: Vinatha and Estari 2013). Though there are numerous approaches to treat diabetes but traditional medicine is preferred due to its lesser side effects and low cost. In Indian systems of herbal medicine most traditional practitioners formulate and give out their own recipes [Seth and Sharma 2004) India is the largest producer of medicinal plants and approx. 2,500 species of plants are used for medicinal purposes. The current study was undertaken in the tribal region of Medaram of Warangal district, Telangana state in order to list out the plant species having antidiabetic activity used by the traditional practitioners.
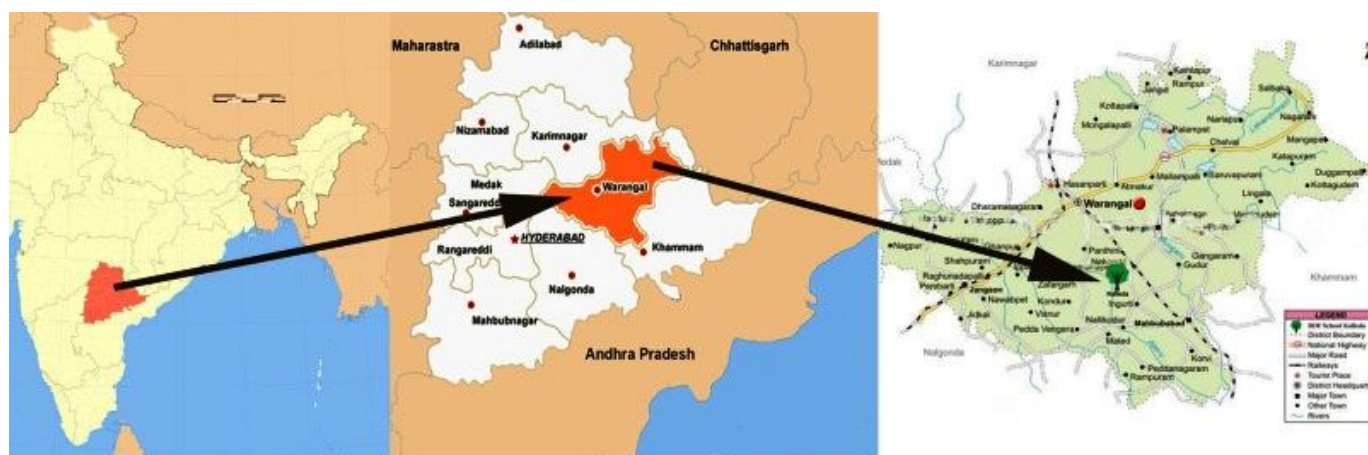
MATERIALS AND METHODS

Study Area:

Warangal District lies in Telangana state has an area of 12,846 km², and a population of 3,246,004 of which 19.20% was urban as of Census of India 2011. It is bounded by Karimnagar, Khammam, Nalgonda and

Figure-1. Location map of Medaram of Warangal District, Telangana State, India.

Medak districts to the North, East, Southwest and West respectively. Warangal district is located at 17° 57′ 21″ N, 79° 36′ 52″ E longitude and latitude. The present study was conducted in the small tribal village Medaram of Warangal district, Telangana state shown in Figure-1.

Methodology:

Interviews, questionnaires and discussions were conducted with the local traditional healers having immense practical knowledge of medicinal plants in the rural area Medaram, Warangal district of Telangana. This study required about four field trips during the survey. Personally they were requested to collect the specimens of the plants which they knew in order to identify the plant species on the site. During the interviews, information regarding the local names of the plant species, plant part used, medicinal uses, methods

of preparation and administration route were documented. The specimens of the plant were prepared, identified and voucher specimens were deposited in the Kakatiya university herbarium for further reference. Jain and Rao's method was used to collect the ethnomedicinal information.

RESULTS AND DISCUSSION

In the present study of a tribal region of Medaram, Telangana the ethnomedical information regarding 14 species of angiosperms belonging to 12 families of antidiabetic activity are identified during the data collection process. Of the 6 informants interviewed 5 were men and 1 was woman and their age range between 38 – 80 years and 70% of them being older than 50 years. The data provided by them is listed in the table-1.

Table-1. Medicinal plants used for the treatment of diabetes by local traditional healers of Medaram.

Sl.No	Botanical Name	Common Name	Family	Parts used
1	Albizia Lebbeck	Tekik	Fabaceae	Root bark
2	Aloe vera	kalamanda	Asphodelaceae	leaf gel
3	Annona squamosa	Sitaphal	Annonaceae	Leaves
4	Cassia auriculata	Thangedu	Caesalpinioideae	Whole plant
5	Emblica aphicinalis	Usiri	Euphorbiaceae	Dry fruit
6	Eugenia jam bolana	Neredu	Myrtaceae	Seed
7	Eupherkia antiquorum	Brambajemudu	Euphorbiaceae	Leaves
8	Ficus recemosa	Medi	Moraceae	Fruit
9	Magnifera indica	Mamidi	Anacardiaceae	Leaves
10	Momordica charantia	Kakara	Cucurbitaceae	Whole plant
11	Murraya koenigii	karivepaku	Rutaceae	Leaves
12	Tinospora cordifalia	Thippa teega	Menispermaceae	Leaves
13	Trigonella foenum	Menthe	Fabaceae	Seeds
14	Tylophora indica	Kakapalla	Asclepiadaceae	Leaves

The data collected shows they possess a good knowledge about the use of medicinal plants in curing various diseases which also associated with their strong belief in the supernatural powers during the healing methods. From the present study traditional healers used ethnomedicines in the form of paste, powders, extracts, juices and in combination with other species to cure diabetes. They majorly used various plant parts like leaves, root, stem bark, seed, fruit, flowers and whole plant to get remedy from diabetes. The most frequently used plant part is the leaf, and the majority of the remedies reported are by administering the leaves orally. The percentages of plant parts utilized for treatment are leaves (50%), seeds (15%), fruit (14%), whole plant (14%) and Root(7%) Shown graphically in the Figure-2.

Figure-2. Percentage of plant parts used
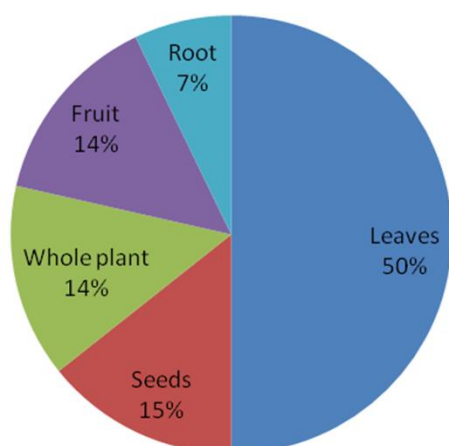
Many common plant species have claimed to have lowering blood sugar properties which enable people to use who are risk of type 2 diabetes. From the recent years the clinical studies which have been carried out shows the potential link between the traditional medicine and improved blood glucose control. This led people to increase the use of natural therapies instead of western drugs to manage their health condition without the risk of side effects. Plant species used for the traditional medicine contain substances that can be used for therapeutic purposes and also are precursors for the synthesis of drugs [Sofowora 1984]. Therefore, treating diabetes mellitus with herbal medicine which are available and do not require laborious pharmaceutical synthesis seems highly attractive. The identified natural plants are not only used for the treatment of diabetes, but also for curing other diseases also. Among the plants used for diabetes, Momordica charantia, Magnifera indica and Aloe vera seems to be most common plants used to treat diabetes and are available everywhere. The presence of bioactive component in the traditional medicine is mainly responsible for the antidiabetic action.

CONCLUSION

Diabetes mellitus is the common chronic endocrine metabolic disorder affecting approx. 300 million people worldwide. Allopathic medicines developed to treat diabetes often carry high risks of adverse effects, limited in efficiency and too costly mainly for the developing countries. Thus to treat diabetes traditional medicine using plants and their derived compounds which are available show negligible side effects than the synthetic antidiabetic drugs and are highly attractive. Different plant species are used individually or in combination with other species to treat diabetes and its complications. .one of the major problem with the traditional treatment is that the active ingredients involved in the treatment are not well defined. It is important to standardize the product, knowing the biochemical activity of active ingredients and their molecular interactions to analyze the therapeutic efficiency of the product. More investigations must be carried out to evaluate the mechanism of action of medicinal plants with antidiabetic activity.

Acknowledgements

Competing interests

The authors have declared that no competing interests exist.

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