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Ethnomedicinal study on plants used to cure Kidney Stone by tribals of Dhanbad district of Jharkhand

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ABSTRACT

The ethno medicinal surveys were conducted to document various plants used to heal kidney stone by tribals of Dhanbad district of Jharkhand. Kidney stones are hard deposits of calcium oxalate, uric acid and cystine. The treatment and surgery cost are very expensive so tribals of Dhanbad use alternative way to cure this disease. They use different plants to treat kidney stone. So it is necessary to collect this ethnomedicinal plants information before it is lost. A total of about 28 plants from various plant families were recorded. Different plant morphologies were identified among the plants documented in this study, including shrubs (4%), trees (22%), climbers (11%), and herbs (63%). According to research, leaves account for 36% of the plant components used to prepare medicines, with the whole plant coming in second (21%), followed by the root (14%), fruit (14%), flower (7%), seed (4%), and rhizome (4%).

Key Words - Ethno medicinal, kidney stone, Tribals, Calcium oxalate

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INTRODUCTION

The use of medicinal plants is found in almost all cultures. Human societies have been in close contact with their environments since the beginning of their formation and used the ingredients since environment to obtain food and medicine. There are many medicinal plants which are used to treat many diseases (Chandrajith *et al.,* 2019). Globally, about 85% of the traditional medicines used for primary health care derived from plants. According to the World Health Organization (WHO) (2002-2005) as many as 80% of world's people depend on traditional medicines in India, 65% of the population in the rural areas use Ayurveda and medicinal plants to help their primary health care need (Kunwar *et al.,* 2013). India is the largest producer of medicinal herbs in the world due to which it is often called a Botanical paradise (Dwevedi and Sharma, 2015). Urinary tract infections and kidney stones are two of the most prevalent conditions affecting both men and women worldwide (Mishra *et al.,* 2016). The main cause of kidney and urinary tract stones is the buildup of calcium, phosphate, or oxalates. However, in the recent past, both international intellectual property regimes and the fields of health care practices have accepted local health traditions with all of their tangible knowledge and accumulated expertise. Additionally, the public's interest in the herbal knowledge of indigenous healers has increased due to the toxicity and negative side effects of allopathic medications. Therefore, in order to increase confidence and faith in this potential wisdom, it is important to chronicle traditional knowledge about medicinal plants and conduct more scientific research.

MATERIALS & METHODS

STUDY AREA

Dhanbad district is bounded on the west by Giridih and Bokaro on north and Dumka on east and south by Purulia district of West Bengal. It is situated in the state of Jharkhand and lies between 23° 37'3"N and 24°4'N latitude and between 86°50'E longitude. The district with population of about 26.8 lakh is Jharkhand's 2nd most populous district. Out of total population 58.13% lives in rural area and most of them are schedule caste (SC) and schedule tribe (ST). Total geographical area of is 2040 km^2 and it is the 5th smallest district by area in the state. Topographically the district can be divided into 3 regions: first, the north and north western portions consisting of the hilly regions. Second, the uplands containing coal mines and most of the industries and third remaining uplands and plains lying to the south of the Damodar River consisting of cultivable flat lands.

Figure 1:- Map of Jharkhand

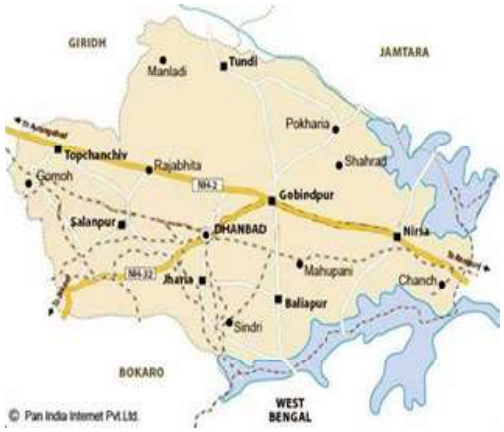

Figure 2:- Map of Dhanbad district

DATA COLLECTION

Ethnomedicinal survey was conducted to collect data from various tribal groups. The information was collected by personal interview of natural healers of different tribes. Data was also collected through questionnaires. The plants specimens were collected from different areas and were identified with the help of previous literature and herbarium (https://www.tropicos.org/hom). The collected plant specimens' families, genera, and species were determined with the assistance of a DSPM University professor, standard floras, and the literature that was available. The specimen of the described species was placed in the Botany Department's herbarium at DSPM University in Ranchi, Jharkhand.

RESULT & DISCUSSION

There has been a lot of research done on plants species that are useful for kidney stone treatment. Thousands of therapeutic plants have been identified by numerous plant biologists in various Assamese districts and neighboring states (Mazumder, 2021). The majority of scientific research focuses on phytotherapy since it has been shown to be essential in reducing stone recurrence (Gilhotra and Christina, 2011). Total 28 plant species have been identified and these plants belong to different families and genera (Table 1). This study shows that local people used 5 trees, followed by 10 shrubs, 6 climbers and 7 herbs. Leaves are most commonly used part for medicine preparation. Research indicates that 36% of the plant parts used to make medications are leaves. Leaf extract is utilized to treat kidney ailments (Kumar *et al.,* 2009). Followed by the entire plant (21%). Plants are astringent and are mostly used against various renal disorders (Kumar and Bhagat, 2012). The root (14%). Roots are diuretic, Boiled decoction of the root with sugar is prescribed in urinary troubles due to stone (Mikawlrawng *et al.,* 2014). Fruit (14%). Fruit and powder of dry seeds given in calculi (Khajuria and Bisht, 2016). Flower (7%), seed (4%), and rhizome (4%). Scientific studies are mostly focused on phytotherapy as it is proved to be vital in preventing reoccurrence of stones (Gilhotra and Christina, 2011).

Table 1. List of medicinal plants used for kidney stone treatment

Sl. No.	Botanical name	Family	Local name	Plant part used
1	*Abutilon indicum*	Malvaceae	Atibala	Seed
2	*Achyranthus aspera*	Amaranthaceae	Chirchita	Root
3	*Aerva lanata*	Amaranthaceae	Gorakhbuti	Whole plant
4	*Aegle marmelos*	Rutaceae	Bel	Leaf
5	*Ageratum conyzoides*	Asteraceae	Jangli pudina	Leaf
6	*Aloe barbadensis*	Liliaceae	Dhritkumari	Leaf
7	*Amaranthus spinosus*	Amaranthaceae	Katila cholai	Leaf
8	*Azadirachta indica*	Meliaceae	Neem	Leaf
9	*Basella alba*	Basellaceae	Poi	Whole plant
10	*Benincasa hispida*	Cucurbitaceae	Petha	Fruit
11	*Boerhavia diffusa*	Nyctaginaceae	Gadhpurna	Whole plant
12	*Carica papaya*	Caricaceae	Papita	Root
13	*Cedrus deodara*	Pinaceae	Deodar	Bark
14	*Centella asiatica*	Apiaceae	Barahmi	Leaf
15	*Chenopodium album*	Chenopodiaceae	Bathua	Whole plant
16	*Citrus aurantifolia*	Rutaceae	Nimbu	Fruit
17	*Cynodon dactylon*	Poaceae	Dhoop ghas	Leaf
18	*Cocos nucifera*	Arecaceae	Narial	Fruit
19	*Cyperus rotundus*	Cyperaceae	Motha	Root
20	*Cucumis mela*	Cucurbitaceae	Kharbuja	Fruit
21	*Curcuma longa*	Zingiberaceae	Haldi	Rhizome
22	*Euphorbia hirta*	Euphorbiaceae	Badi dudhi	Whole plant
23	*Hydychium coronarium*	Zingiberaceae	Sulochana	Flower
24	*Moringa oleifera*	Moringaceae	Sahjan	Leaf, flower
25	*Raphanus sativus*	Brassicaceae	Muli	Root
26	*Ocumum basilicum*	Lamiaceae	Basil	Leaf
27	*Oxalis corniculata*	Oxalidaceae	Changeri	Whole plant
28	*Tribulus terrestris*	Zygophaceae	Ghokharu	Leaf

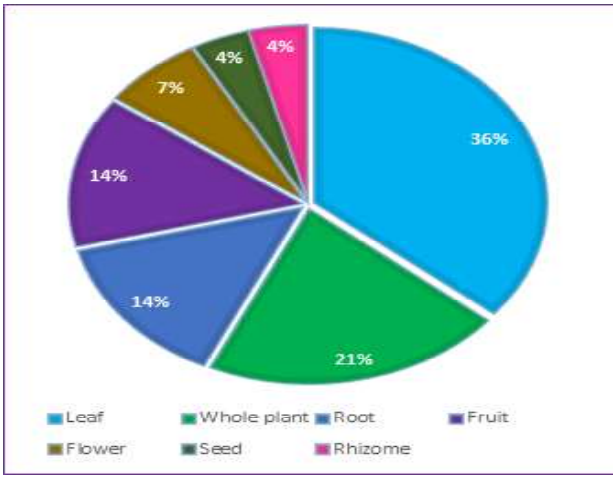

Fig. 3-Plant parts used in preparing medicines

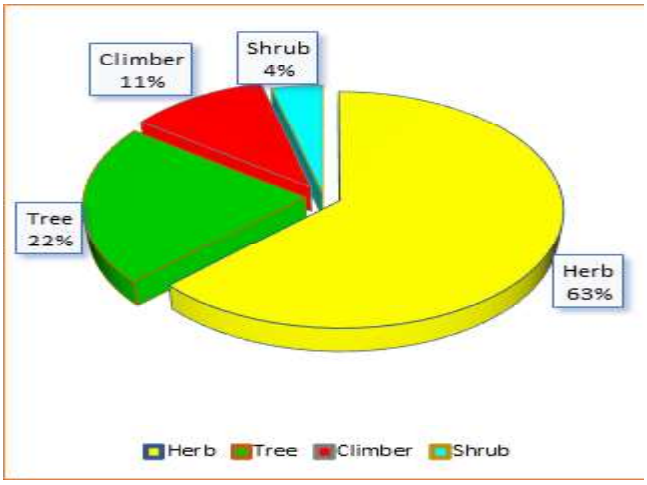

Fig. 4- Growth form of recorded plant species

CONCLUSION

In this study we found that tribal people depend on wild medicinal plants for their primary health care because of lack of modern medicinal facilities. This study also revealed that only few people know about medicinal properties of plants, who keep these information secret from other people and only reveal to one person of the family but today's younger generation do not have a will to get this indigenous knowledge. Hence, knowledge of ethnomedicinal plants does not reach to next generation. Deforestation and urbanization are two main factors of disappearing of these medicinally important plants and plant products which are used to cure kidney stones. This study may provide various information for further clinical and pharmaceutical studies.

REFERENCES

Botanical database containing taxonomic information of plants- https://www.tropicos.org/hom

Chandrajith R., Weerasingha A., Premaratne K. M., Gamage D., Abeygunasekera A. M., Joachimski M. M., Senaratne A. 2019. Mineralogical, compositional and isotope characterization of human kidney stones (urolithiasis) in a Sri Lankan population. *Environ Geochem Health.* 41(5): 1881-1896.

Dwevedi A., Sharma K. 2015. Cadmba: A miraculous tree having enormous pharmacological implications. *Pharmacolognosy Review.* 9(18):107-113.

Gilhotra U. K. R., Christina A. J. M. 2011. Effect of *Rotula aquatica* Lour. on ethylene-glycol induced urolithiasis in rats. *Int. J. Drug. Dev. & Res.* 3: 273-280.

Khajuria A. K. & Bisht N. 2016. Ethnomedicinal plants used to treat Nephrolithiasis, A case study Pauri (PAURI Garhwal), Uttarakhand. *Synthesis*. 2(5).

Kumar G. P., Gupta S., Murugan M. P., Singh S. B. 2009. Ethnobotanical studies of Nubra valley- A cold arid zone of Himalaya, Ethno botanical leaflets. 13:752-765.

Kumar R., Bhagat N. 2012. Ethnomedicinal plants of district Kathua (J&K). *Int. J. Med. Arom. Plants.* 2(4):603 611

Kunwar R. M., Mahat L., Acharya R. P., Bussmann R. W. 2013, Medicinal plants, traditional medicine, market and management in far-west Nepal. *Journal of Ethnobiology and Ethnomedicine.* 9:1-10.

Mazumder T. Z. 2021. Phytochemical study of some traditional medicinal plants of northeast India. *Agric Ecosyst Environ.* 2(11):59-64.

Mikawlrawng K., Kumar S. 2014. Vandana. Current scenario of Urolithiasis and the use of medicinal plants as anti urolithiatic agents in Manipur (North East India): A Review, Int. *J. of Herbal Med*. 2(1):1-12.

Mishra M., Sujana K. A. and Dhole P. A. 2016, Ethnomedicinal plants used for the treatment of cuts and wounds by tribes of Koraput in Odisha. *Indian Journal of Plant Sciences.* 5(4):14-19.

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