

Ethnomedicinal studies of common plants of Khunti district of Jharkhand, India

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ABSTRACT

The investigation on the local knowledge about traditional herbal medicine is becoming increasingly important in defining strategies and actions for conservation of medicinal plants. The study therefore considered worthwhile to collect various information from local rural and tribal population living in Khunti district of Jharkhand (India). Concerning the use of medicinal plants, very common species during the surveyed were identified. Ethno medicinal plants are traditionally used in different parts of Khunti district of Jharkhand (three blocks areas). These common plants used for the treatment of different diseases like gastrointestinal disorders, urinary tract infections, respiratory problems, skin diseases, heart diseases etc. But so far the records published on folk and traditional health approaches, practiced in Khunti district as well as other parts of Jharkhand are still very scarce. Ethnopharmacological field studies not only contribute in the public health domain but also serve as the basis for further pharmaceutical and medical researches. In such context, present field study aims to record the plant crude drugs used traditionally in three blocks of Khunti district of Jharkhand. Data were collected through semi-structured questionnaires replied by local people, local healers, experienced elders, knowledgeable informants and patient using herbal crude drugs. Botanical name, common name, family, parts used, mode of drug preparation and administration route and indication of total 25 plants belonging to 24 families and used by local people of Khunti district are reported in this paper. Herbarium specimens of 15 species were also prepared, and after being authenticated, were deposited in University Department of Botany, Kolhan University, Chaibasa, Jharkhand. Additional researches are emphasized for phytochemical and pharmacological studies of these plants to prove their rational usages by the local community. Similarly, more works are required for reporting medicinal plants traditionally used in other parts of Khunti district and those of entire Jharkhand.

Key Words - Medicinal plants, Khunti district, Ethnopharmacological, Traditional usages, different diseases, Phytochemical and pharmacological studies

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INTRODUCTION

Man depended on plants not only for food, but also to cure his various ailments since several thousand years. Common diseases such as gastrointestinal disorders, appetite, stomach pain, ulcers, dysentery, diarrhoea, constipation, piles, leprosy, cough, pneumonia, T. B., fever, skin diseases, UT diseases, abdominal disorders, dental disorders etc.

The causes of different diseases are due to contaminated food and water supplies, nutritional factors, the mode of living styles and also pathogens like bacteria, viruses, protozoans, parasites and helminthes. According to WHO, 80% of the population living in the developing countries rely almost exclusively on traditional medicines. At

present about 65% of the Indian population is dependent on the traditional system of medicine. In India, it is reported that traditional healers use 2500 plant species and 100 plant species serve as regular sources of medicine. Local herbal practitioners in the study area are using a variety of plant species for the treatment of different types of diseases successfully. The main objective of this survey was to document the traditional knowledge on common medicinal plants of Khunti district of Jharkhand used for the treatment of various diseases. Documenting the indigenous knowledge through ethnomedicobotanical studies is important for the conservation of biological resources as well as their sustainable utilization. Some diseases such as fever, headache, gastrointestinal disorders, cough & cold, diarrhoea etc. are very common to see the problems in the society and effective drugs are very much required. The results of this study will attract the students, researchers, Scientists, Pharmaceutical industries as well as herbal healers and play an important role in reducing the different problems/diseases in the society.

MATERIAL AND METHODS

Study area

Khunti is the head quarter of Khunti district in the Indian state of Jharkhand. It is in South Chotanagpur division and one of the 24 districts of Jharkhand. The district of Khunti was carved out of Ranchi district on 12th September, 2007. It is historically known as the centre of activity of the Birsa movement. As of 2011 census, it is the second least populated district of Jharkhand (out of 24), after Lohardaga. The district is the part of Red Corridor.

Khunti district in Jharkhand has a population of 5,31,885 as per the 2011 census. People exhibit a vast diversity in their culture, tradition and living system. The district has 768 villages, all have a very rich heritage of herbal drugs. The district occupies an area of 2611 sq. kms. Encompasses the longitudinal ranging from 23.0140203° North to the 85.2724457° East. The district has 6 blocks namely-Rania, Murhu, Torpa, Karra, Khunti & Arki. The soil

is mainly black and red soil. The climate is tropical rain forest. Maximum rainfall takes place during the months from July to September that accounts for more than 90% of the total rainfall in the state. Average elevation of the district is 611 m above sea level. The mean daily maximum and minimum temperature varies between 29°C and 18°C respectively. The average annual rainfall is about 1100 mm, post-monsoon is 98 mm, winter rain is 65 mm and pre-monsoon is 212 mm.

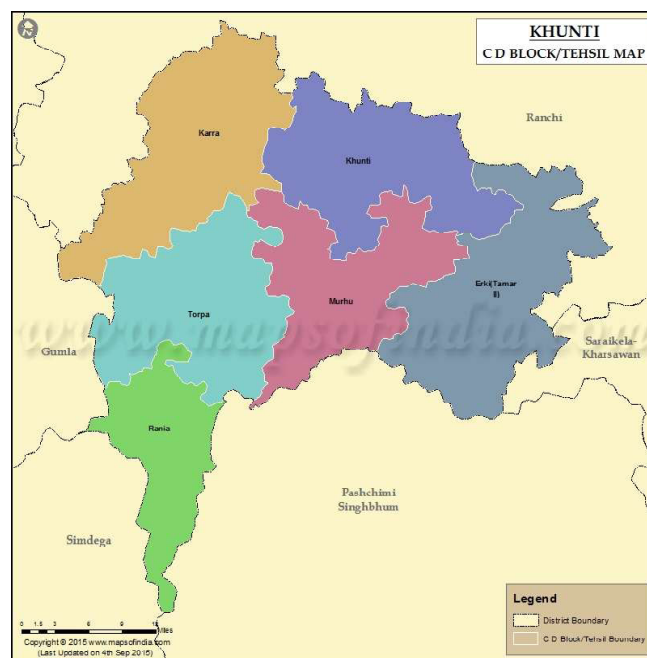


Fig.-Map of Khunti (Courtesy : Google maps)

The information on ethnomedicinal studies of common plants used for treating different diseases of folklore source was obtained during the ethnomedicobotanical survey of Khunti district conducted in 2019 to 2020. For this purpose, frequent field trips were made to various villages belonging to 3 blocks of the district namely, Arki, Murhu and Khunti. A total of 18 herbal healers (12 Men & 6 Women) of the age group between 40 and 69 years belonging to various communities and tribes such as Munda, Birhor, Oraon, Santhal and Puran were identified, interviewed and the information given by them about the uses of medicinal plants in the locality were recorded. The data were collected through structured

questionnaires. Data on the local names of folk drug plants, parts used, method of preparation and dosage were noted. The ethnic as well as the cultural importance of the drug plants were also recorded. The specimens of all drug plants were photographed, collected and identified by referring to different Floras, such as Hains Floras, Floras of Kirtikar and Basu, A glossary of medicinal plants by Dr. R. N. Chopra etc. Voucher specimens were made by using standard plant press authenticated and deposited at the University Department of Botany, Kolhan University, Chaibasa, Jharkhand.

RESULTS

The data obtained from the survey is compiled in Table-1, where the plant species are arranged in alphabetical order. A total of 25 plant species belonging to 25 genera and 24 families have been recorded for the treatment of different diseases through common plants found in Khunti district region. For each species scientific name with voucher number, family, local name, parts used and method of drug preparation and dosage are provided. Families Moraceae had two genera and rest families had one genus each. Different plants parts were used for treatment of different diseases. In general, leaves are highly used followed by fruits, stem, roots, whole plant and flowers. In majority of cases, the herbal drugs were prepared in the form of juice, decoction, paste and powder. Some of the important drugs preparations are, the *Abrus precatorius* L., leaves are grind along with roots and mixture is given with water orally to prevent pregnancy, *Achyranthes aspera* L., soak cotton in extract of 2-3 leaves and applies it on the aching tooth. It gives immediately relief and aids in filling and healing even the old time cavities, *Azadirachta indica* A. Juss, sprinkle the powder of 5-10 leaves on the affected area. In case of eczema, it doing, boils, acne and gonorrhoea disorders, take bark of 100 years old margosa tree and grind it into fine powder. At night, soak 3 gm powder in 200 gm

water and next day morning, strain the solution, add honey to it and give this to the patient. An another drug preparation, 100 ml of whole plant extract of *Cynodon dactylon* L. mixed with 10 gm of honey and 10 gm of sugar and given orally daily once for 4-5 days for the treatment of all types of Piles.

DISCUSSION

The plant species reported in this present study were cross checked with available different literatures. Some of the plant species such as *Abrus precatorius* L., *Abutilon indicum* L., *Achyranthes aspera* L., *Aegle marmelos* L., *Cassia tora* L., *Cynodon dactylon* Pers., *Ficus benghalensis* L., *Leucus aspera* Spreng., having many ethnomedicinal properties are also used for the treatment of different diseases in the other parts of Jharkhand too. The plant species *Mangifera indica* L. and *Psidium guajava* L. were used for the treatment of various gastrointestinal disorders in Assam and different regions of Bihar. Many of the plant species, listed in Table-1, have not been reported in the previously available literature. However, some of them were used for the treatment of the different ailments in human beings. For instance, *Abutilon indicum* L. used for skin diseases, *Cynodon dactylon* Pers. as diuretic, *Ficus religiosa* L. as cardiotoxic and *Mangifera indica* L. for diabetes in Bengal and Odisha. These recorded medicinal plant species were used for the treatment of different ailments of human beings at all parts of country. Hence these plants are very important for us. In Khunti district the survey was done in three blocks areas. The maximum household families of these blocks areas were targeted for surveyed and common ethnomedicinal plants were recorded with the help of knowledgeable Baidhyas and experienced informants. Hence present study is a big contribution to the existing knowledge of folk remedies that are in current practice for the treatment of different diseases.

TABLE-1: The common medicinal plants found in Khunti district of Jharkhand (India)

Sl. No.	Botanical name of plant	Family	Local name	Parts & mode of uses
1.	<i>Abrus precatorius</i> L.	Fabaceae	Gunja, Moonga	Leaves are grind along with roots and mixture is given with water orally to prevent pregnancy. Leaves are made into paste along with roots. This paste is prescribed in dose 5 gm per day to improve the rate of sperm count. In leprosy , the juice of gunja is mixed with chitrak and given to the patient, every morning and evening. It cures leprosy. Seeds used for stomach disorder .
2.	<i>Abutilon indicum</i> L.	Malvaceae	Kanghi, Pushi Kanta	Seeds are laxative, diuretic, aphrodisiac and expectorant. Leaves and roots are demulcent and diuretic. Seeds used in piles, sexual debility and gonorrhoea. Leaves are locally applied to boils and ulcers and as fermentations to painful parts of the body. Decoction used in toothache and tender gums given internally for inflammation of blood vessels.
3.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Chirchita	Toothache - Soak cotton in extract of 2-3 leaves and applies it on the aching tooth. It gives immediately relief and aids in filling and healing even the old time cavities. Piles - Take 3 gm powder of apamarg seeds. Give this with the water with which rice is rinsed, every morning and evening. This helps cure bleeding from the piles.
4.	<i>Aegle marmelos</i> L.	Rutaceae	Bael	Headache :-Grind its dried root in a little amount of water and apply the paste on the forehead. Angina - gives 10 ml juice of its leaves with ghee. Stomach-ache - Take 10 gm of bel leaves and grinds them with 7 black pepper. Mix 10 gm sugar candy in the solution and give this to the patient, twice a day. Burning sensation : - Soak 20 gm bel leaves in 500 ml water for 3 hours. After every 2 hours, give 20 ml of this water to the patient. It cures burning sensation.
5.	<i>Aloe vera</i> Mill. Burm	Liliaceae	Ghritkumari Ghritkuwari	Headache : - The pulp of Aloe and little amount of powder of daruhaldi on it. Heat the pulp slightly and apply on the painful area. It cures vata and kapha related headache. Eye disorders : - Apply the pulp of Indian Aloe on eyes. It cures the redness of eyes and reduces the beat of eyes. It is also beneficial in viral conjunction. Mix a little amount of turmeric in its pulp and warm it slightly. Tie this mixture on the eyes. It cures pain in the eyes. Bronchitis : - Prepare ash of its pulp and saindhava salt. Give 12 gm of this ash with munakka, every morning and evening to the patient. It cures bronchitis and severe bronchitis.
6.	<i>Azadirachta indica</i> A. Juss	Meliaceae	Neem	Skin diseases : - Sprinkle the powder of 5-10 leaves on the affected area. In case of eczema, it doing, boils, acne and gonorrhoea disorders, take bark of 100 years old margosa tree and grind it into fine powder. At night, soak 3 gm powder in 200 gm water and next day morning, strain the solution, add honey to it and give this to the patient. Malaria : -Give 4-10 droops of margosa oil, 1-2 times a day. Grind margosa leaves with half the amount of phitkiri and prepare tablets of 500 gm each. Give one tablet with sugar syrup. It cures all types of fever and is especially beneficial in malaria fever. Blood disorders : - The bark of margosa root is considered the best medicine for blood purification. Give 5-10 gm of its decoction or cold extract everyday to the patient. It cures all types of blood disorders.
7.	<i>Calotropis procera</i> (Ait.) R. Br.	Asclepiadaceae	Madar, Akwan	Eczema - mix equal quantity of madar milk and honey and apply this mixture in the affected area. It heals the eczema quickly. Ulcer - Take 2 madar leaves and smear them with castor (arand) oil. Tie these leaves on the affected parts. Ulcer is cured or burst out. Epilepsy - Take madar milk and mix it with little amount of sugar candy. Take about 125 mg of the mixture with 10 gm of hot milk every day. It cures epilepsy. Toothache - mix salt in madar milk and apply this on an aching tooth. This helps in relieving pain.

8.	<i>Cassia tora</i> L.	Caesalpiniaceae	Chakor, Chakavad	Cough- gives 1-2 gm powder of its seeds with warm water for a few days. Gynaecological disorders- in case of leucorrhoea in woman grind its 5-10 gm root with water in which rice is rinsed. Strain the solution and give this to the patient. It cures gynaecological disorders and leucorrhoea. Diabetes- Take its 10 gm root and boil in 400 ml water till water is reduced to ¼ th. Give this to the patient. Diarrhoea in children- in case of greenish yellow stools during teething in children, give 5 gm decoction of its leaves. It cleanses the stomach. Urticaria- give 4 gm powder of its root with small amount of ghee. It cures urticaria.
9.	<i>Coccinia indica</i> W. & A.	Cucurbitaceae	Kundru, Tundi	Skin diseases- The leaves of Coccinia is boiled with oil and apply on eczema, itching, it cures skin diseases. Diabetes- the fruit is used as a vegetable and the juice of leaves and fruits are used as a remedial tonic for diabetes. Dysuria- the fresh juice of its root is taken in empty stomach, it cures Dysuria. Ear pain- the juice of its leaves is mix with oil and warms it, when the oil is warm; it is taken in ear pain.
10.	<i>Cynodon dactylon</i> Pers.	Poaceae	Doobgansh, Bhargavi	Epilepsy- Extract of its whole plant helps cure excessive flow in menstrual cycle, madness and epilepsy. Mix powder of white Sandal wood and sugar in it juice and give this to the patient. It cures epilepsy. Mouth problems- Give decoction of Doob grass for gargles. It cures boils in mouth. Vomiting- Give Doob grass with water in which rice is rinsed. It cures vomiting due to pitta. Diarrhoea- Give fresh juice of doob grass. It has binding properties and is beneficial in curing diarrhoea. Sexual potency- White Doob grass reduced sexual potency and desire
11.	<i>Cyperus rotundus</i> L.	Cyperaceae	Moth gansh, Musta gansh	Epilepsy- Take it from the ground from the northern direction of the holy day and give this to the patient with milk of a simple coloured cow. Diarrhoea- in diarrhoea the roots are used to cure. Advanced stage of jaundice- give 5 gm of its powder with 125 mg iron ash followed by decoction of catechu. Gonorrhoea- In gonorrhoea gives its 50 ml decoction thrice a day.
12.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Dudhi, Dudhika	Lactation (Galactagogue)—In case of low amount of milk production in lactating mothers, give 1 gm of milk of this plant every morning and evening for 10-20 days. Asthma —Give its whole plant's decoction or 10 ml juice with 1 teaspoonful honey. It cures asthma. Leucorrhoea —Grind and strain the solution of its 2 gm root and give this to the patient thrice a day.
13.	<i>Ficus benghalensis</i> L.	Moraceae	Bargad, Vata, Dhruv	Tooth problems —Take 10 gm tree bark, 5 gm catechu and 2 gm black pepper. Grind them all to form a fine powder, uses this powder to brush the teeth. Apply banyan leaf's milk on aching teeth. It gives relief. Diarrhoea —Take 6 gm buds and boil in 100 ml water. Strain the solution and mix sugar candy in it. Give this to the patient, followed by butter milk. It immediately cures diarrhoea.
14.	<i>Ficus religiosa</i> L.	Moraceae	Peepal	Tooth problems —Take 10 gm tree bark, 5 gm catechu and 2 gm black pepper. Grind them all to form a fine powder, use this powder to brush the teeth. Apply peepal leaf's milk on aching teeth. It gives relief. Diarrhoea —Take 6 gm buds and boil in 100 ml water. Strain the solution and mix sugar candy in it. Give this to the patient, followed by butter milk. It immediately cures diarrhoea.
15.	<i>Leucus aspera</i> Spreng.	Lamiaceae	Dronpushpi, Tumba	Flowers are given with honey for coughs & cold in children. The leaves's juice is used as an external application for psoriasis, chronic skin eruptions and painful swelling. An alcoholic extract of leaves shows antibacterial activity. The extract of whole plants(5 ml) with 1 teaspoonful of honey mixed together and given to joundice patient twice a day regularly five days. It cures joundice and stomach disorders.

16.	<i>Mangifera indica</i> L.	Anacardiaceae	Aam, Amb	Diarrhoea with bleeding- take 25 gm ml of mango leaf extract, 12 gm each of honey and milk and 6gm ghee. Mix them well and give this to the patient. It helps in curing diarrhoea with blood. Diabetes -Take 11 gm of mango leaves dried under the shade and boils them in 500 ml of water. When 125 ml water is left, filter the water. Drinking of this solution every morning and evening, for a few days completely cure diabetes. Decoction of mango is very useful in curing chronic dysentery and gonorrhoea. Take 10 gm of mango flower powder with milk. It helps improving sexual potency . Gums of mango are very effective when applied on boils and wounds.
17.	<i>Mimosa pudica</i> L.	Mimosaceae	Lajwanti, Chhuimui, Sharmili	Piles - Give 5 gm of its leaves with milk every morning and evening on thrice a day. Bleeding piles - give 3 gm powder of its root with curd it gives immediate relief in diarrhoea with blood. Indigestion – give 20 mg juice of its leaves. It cures indigestion. Swelling - Apply the paste of its root on the swollen area. It dissolves the swelling. Swellings of testicles- Crush its leaves and apply the paste on the testicles. It cures the swelling of testicles.
18.	<i>Moringa pteryosperma</i> Gaertn.	Moringaceae	Sahajan, Munga,	Toothache - Keep its gum in mouth. It cures rotten and decaying of teeth. Epilepsy - In case of epilepsy, give 25 gm decoction of its root, every morning and evening. Digestive power - mix 2 gm ginger roots in 10 ml juice of its root and give this to the patient every evening. It enhances the digestive power. Dysuria - Give 10 gm gum with curd for seven days. It cures Dysuria. Kidney stones - Give 20 gm decoction of its bark thrice a day. Potency - Boil its 10 flower in 250 ml milk and give this to the patient every morning and evening. It improves potency.
19.	<i>Nerium indicum</i> Mill.	Apocynaceae	Kaner safed, Siddhapushpa, Kaner	A paste of the root is externally applied to haemorrhoids and ulceration in leprosy . An oil extract from the root bark and leaves is prescribed as ring worm and other skin diseases . Paste of the root bark and leaves is used in ringworm and other skin diseases. Oil extracted from the root bark is used in skin diseases of scaly nature. Leaves are cardio active and diuretic, anti-inflammatory antifungal and insecticidal in nature.
20.	<i>Psidium guajava</i> L.	Myrtaceae	Amrud	Vomiting - Give 10 gm juice of guava leaves. It controls vomiting. Indigestion - Take 10 gm juice of soft leaves and mix sugar in it. Give this to the patient daily, once in the morning. It gives relief within 7 days. Constipation - during breakfast, give guava with black pepper, black salt and ginger to the patient. It cures indigestion, acidity, swelling of stones caused by in indigestion and constipation.
21.	<i>Punica granatum</i> L.	Punicaceae	Dalim, Anar	Cough - Keep the peel of the fruits in the mouth and suck. It helps in curing cough. Diarrhoea - Extract pomegranate juice. Give 40 ml of this juice to the patient. It controls diarrhoea and vomiting. Jaundice -Take 250 ml pomegranate juice and mix with 750 gm sugar and prepare thick syrup. Give this to the patient 3-4 times a day. Piles -Prepare 100 gm decoction of pomegranate root and mix 5 gm ginger root powder in it. Give this mixture to the patient 3 times a day. It cures piles.
22.	<i>Solanum surattense</i> Burm. F.	Solanaceae	Kantakari,	For head pain - Apply the juice of its fruits on the head. Eye pain -Grind its 20 leaves and apply the paste on the eyes. It cures the pain. Epilepsy - Take equal quantity of its seeds and poppy seeds. Grind them in child's urine and put 2 drops of in the nose, three times a day. Cough - Give 1 gm powder of its flower with honey. It cures all types of cough in children. Swelling of throat - Give 15 gm juice of its fruits, twice a day. It cures swelling of throat. Dysuria - mix 20 ml juice with buttermilk. Strain the solution through clothes and give this to the patient. It cures the obstruction in urination.

21.	<i>Punica granatum</i> L.	Punicaceae	Dalim, Anar	Cough- Keep the peel of the fruits in the mouth and suck. It helps in curing cough. Diarrhoea- Extract pomegranate juice. Give 40 ml of this juice to the patient. It controls diarrhoea and vomiting. Jaundice- Take 250 ml pomegranate juice and mix with 750 gm sugar and prepare thick syrup. Give this to the patient 3-4 times a day. Piles- Prepare 100 gm decoction of pomegranate root and mix 5 gm ginger root powder in it. Give this mixture to the patient 3 times a day. It cures piles.
22.	<i>Solanum surattense</i> Burm. F.	Solanaceae	Kantakari,	For head pain- Apply the juice of its fruits on the head. Eye pain- Grind its 20 leaves and apply the paste on the eyes. It cures the pain. Epilepsy- Take equal quantity of its seeds and poppy seeds. Grind them in child's urine and put 2 drops of in the nose, three times a day. Cough- Give 1 gm powder of its flower with honey. It cures all types of cough in children. Swelling of throat- Give 15 gm juice of its fruits, twice a day. It cures swelling of throat. Dysuria- mix 20 ml juice with buttermilk. Strain the solution through clothes and give this to the patient. It cures the obstruction in urination.
23.	<i>Terminalia arjuna</i> (Roxb.) W. & A.	Combretaceae	Arjun tree	Ear pain- Put 3 drops of its juice of leaves in the ears. It cures ear pain. Heart beat- Grind thick bark of arjuna. Mix 5 gm of this powder in 1 cup of milk after removing cream. Give this to the patient every morning and evening. It is beneficial in curing all types of heart beat disorders. Spermatorrhoea- Give decoction of its bark, regularly to the patient. Fracture- Give 5 gm powder of Arjun barks 3 times a day, with 1 cup of milk, for a few weeks. Its strengthens the bone and helps the fracture heal faster.
24.	<i>Tridax procumbens</i> L.	Asteraceae	Jayanti, Rechod Ara (Mundari)	The leaf juice exhibits antiseptic, insecticidal and parasitical properties. It is used to check haemorrhage from wounds, cuts and bruises, also for restoring hair growth. Leaves are also used for bronchial catarrh.
25.	<i>Vitex negundo</i> L.	Verbanaceae	Sindwar, Nirgundi	Seeds are prescribed in spermatorrhoea . Leaves are anti-inflammatory, analgesic, removes foetid discharges and worms from ulcers. The leaves's juice is also used to cure ear ache. Flowers are used as febrifuge, antidiarrhoeic disorders.

CONCLUSION

The present investigation reports 25 medicinal plant species used for the treatment of different diseases. The tribal people as well as local community of Khunti district are highly dependent on these common medicinal plants as they easily available and proved to be effective for primary health cares. The reported plant species include both wild and cultivated ones. The most significant plants used for the treatment of different diseases by the most herbal healers or Baidhyas in the district are *Achyranthes aspera* L., *Azadirachta indica* A. Juss., *Terminalia arjuna* (Roxb.) W. & A., *Tridax procumbens* L. and *Vitex negundo* L. Hence all these plant species are very useful for primary health care system of inhabitants of local people of Khunti district. These plants can be taken up for

further pharmacological and clinical studies useful in the formulation and preparation of new drugs for treatment of diseases.

Recommendations for conservation:-

Due to lack of interest of young generation towards traditional knowledge, urbanization and unscientific exploitation of natural forests, valuable knowledge of these medicinal plant species are getting depleted leading to their exploitation. Therefore, it is necessary to collect and document such previous knowledge from the tribal and remote areas before their complete depletion and also increase awareness among the tribal people for sustainable use of the plants wealth and their conservation. There were so many age old traditional methods of conservation of medicinal

plant species in the areas, based on age old believes cultural traditions, taboos and avoidance. Some techniques are as follows:-

- The need for a coordinated conservation action based on both "in situ" and "ex situ" strategies.
- The inclusion of community and gender perspectives in the development of policies and programmes.
- The development of sustainable harvesting practices.
- The need for more information on the medicinal plant trade-establishing systems for inventorying and monitoring the status of stocks of medicinal plants.
- Encouraging micro-enterprise development based on sustainable resource use by indigenous and rural peoples.
- Protection of traditional resources and the intellectual property rights.

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