

A survey of Traditional medicinal plants of Uttar Pradesh (India) - Used in treatment of infectious diseases

Achuta Nand Shukla¹, Sharad Srivastava² and A.K.S. Rawat²

¹ Botanical Survey of India, Northern Regional Centre, 192-Kaulagarh Road, Dehra Dun-248195 (India)
achutbsi@gmail.com

² Pharmacognosy & Ethnopharmacology Division, National Botanical Research Institute (CSIR), Lucknow – 226 001 (India)

Abstract: The present study was to explore the traditional plant knowledge of Uttar Pradesh, India used in infectious disease. Ethnobotanical information was obtained through open informal interviews. The informants were residents, belonging to families living in the study area since generations, and involved at least partially in agriculture. A total of 184 botanical taxa were recorded along with local name, family, habit and parts used. These 184 plants species which provide the crude drugs pertain to 151 genera and 74 families. These plants used to cure 12 infectious ailments. The most widely sought after plant parts in the preparation of remedies in the area are the leaves (17.74%) and bark (14.51%). Plants used by local people were compared with previous ethnobotanical literature, concerning the neighboring areas of Uttar Pradesh. Our results highlight the role of the traditional use of plants in the maintenance of health and the prevention of infectious diseases.

[Achuta Nand Shukla, Sharad Srivastava and A.K.S. Rawat. **A survey of Traditional medicinal plants of Uttar Pradesh (India) - Used in treatment of infectious diseases.** *Nat Sci* 2013;11(9):24-36]. (ISSN: 1545-0740). <http://www.sciencepub.net>. 5

Keywords: Ethnobotany, Traditional plant, Infectious diseases, Uttar Pradesh, India.

1. Introduction

Traditional medicine is now recognized worldwide as a healthcare resource. The World Health Organization has pointed out the traditional medicine is an important contributor to its health goals (www.wpro.who.int/health). Today, according to the WHO, 80% of the world's population depends on traditional medicine for their primary health care needs. Infectious diseases are the second leading cause of death worldwide (World Health Report, 2002). Infectious disease is a clinically evident disease resulting from the presence of pathogenic microbial agents, including pathogenic viruses, pathogenic bacteria, fungi, protozoa, multicellular parasites, and aberrant proteins known as prions. These pathogens are able to cause disease in animals and or plants. Infectious pathologies are usually qualified as contagious diseases due to their potential of transmission from one person or species to another Infectious disease. Transmission of an infectious disease may occur through one or more of diverse pathways including physical contact with infected individuals. These infecting agents may also be transmitted through liquids, food, body fluids, contaminated objects, airborne inhalation, or through vector-borne spread (MacGraw-Hill Encyclopedia of Science and Technology 2005). The term infectivity describes the ability of an organism to enter, survive and multiply in the host, while the infectiousness of a disease indicates the comparative ease with which the disease is transmitted to other hosts. An infection however, is not synonymous with an infectious

disease, as an infection may not cause important clinical symptoms or impair host function. In the current scenario, the integration of local indigenous knowledge for sustainable management and conservation of natural resources is receiving more and more recognition (Posey, 1989). Moreover, an increased emphasis is being placed on possible economic benefits especially of the medicinal use of tropical forest products instead of pure timber harvesting (Reddy et al., 2008). The present study is to focus on the current status of knowledge of medicinal plants of Uttar Pradesh which are used in infectious disease.

2. Material and Methods

Uttar Pradesh (U.P.) is located between 23° 52' N and 31° 28' N lat and 77° 3' and 84° 39' E long. The altitude varies between 50 -500 m above mean sea level. The state is bounded by Nepal on the north, Uttarakhand on the north-east, Himachal Pradesh on the north-west, Haryana on the west, Rajasthan on the south-west, Madhya Pradesh on the south and south-west and Bihar on the east. The climate of the state is tropical monsoonal with annual rainfall varying between 600-2000 mm. The average maximum and minimum temperatures are 48°C and 2°C, respectively. There are three distinct seasons: winter from October to February, summer from March to mid-June, and rainy from June to September.

The field work was carried out from September 2009 to March 2010, by gathering ethnobotanical information regarding the use of wild

plants and, in addition, of some cultivated plants. Data were obtained mainly through open informal interviews. All informants were residents, belonging to families living in the study area since generations, and involved, at least partially, in agriculture. Quite often the interviews occurred in the square of village, in the fields, or in the houses of informants. Plant samples were generally collected in the fields upon the indications provided by the informants. Informants were requested to indicate vernacular names, folk uses, parts used, preparation procedures and associations with other plants. Only the plants indicated by at least two informants were considered.

Samples of medicinal plants were collected for scientific identification and herbarium preparation following standard procedures (Jain & Rao, 1977) Citation of author names was given according to Brummitt and Powell (1992). The voucher specimens of plants were deposited in the herbarium of National Botanical Research Institute, Lucknow (LWG). The

nomenclature adopted was according to (Uniyal et al., 1994; Uniyal et al., 1997, 1999; Khanna et al., 1999).

3. Results

Through this study, 184 medicinal plant species belonging to 151 genera in 74 families were collected. All the medicinal plants have been written down with their traditional prescriptions. Most ingredients of the prescriptions are plants, of which the local name and the botanical Latin name were written down; some ingredients are things like liquid wax, tallow and muskiness. All the plants have been listed in alphabetical order with the prescriptions (Table 1).

The most cited families of medicinal plants were Caesalpiniaceae, Euphorbiaceae (24.32% each), Fabaceae (21.62%), Malvaceae, Scrophulariaceae, Mimosaceae (8.10% each) and Bignoniaceae, Anacardiaceae, Convolvulaceae and Moraceae (6.75% each) (Fig. 1).

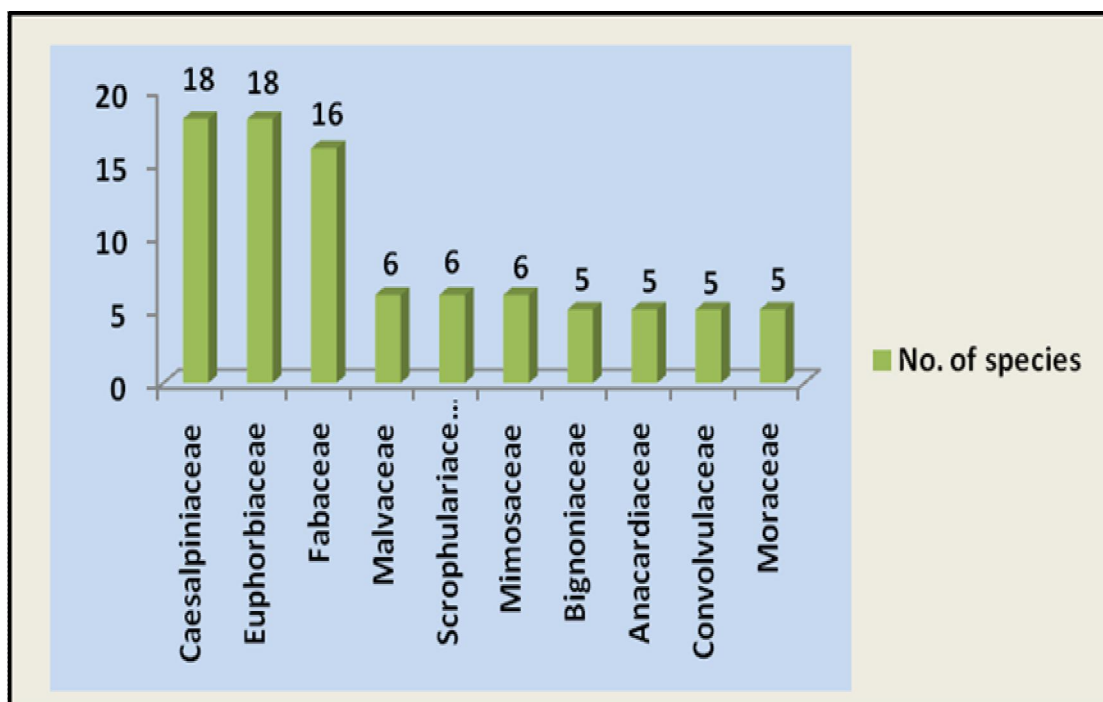


Figure 1. Dominant families of medicinal plants

The results of growth form analysis of medicinal plants showed that herbs made up the highest proportion being represented with (72 spp., 39.13%), followed by trees (61 spp., 33.15%), shrubs (27 spp., 14.67%), climbers (7 spp., 3.84%), twiners (6 spp., 3.26%), undershrubs (3 spp., 1.63%) and lianas (2 spp., 1.08%) (Fig. 2).

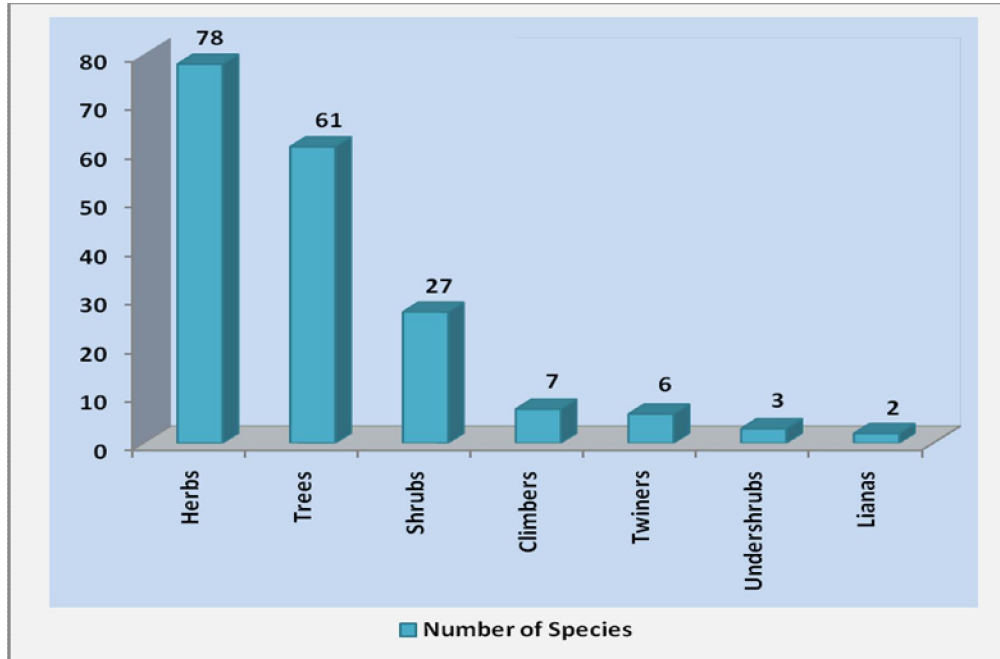


Figure 2. Habit wise distribution of ethnobotanical species

One hundred seventy (93.47%) of the medicinal species are Dicotyledons, twelve are Monocotyledons (6.52%), one is fern and gymnosperm (1.5% each). Different preparations and applications of medicinal plants are shown in Fig. 3. The methods reported for internal use were paste, decoction, powder, juice, oral, extract, infusion, oil and ash. The methods documented for external use included paste, decoction, powder, juice, extract, infusion, oil, ash and direct application of fresh or boiled plant material. Overall, paste was the most cited preparation (31%) followed by decoction (24%), powder (15%), juice (9%), extract (8%), oral (8%), infusion (2%), oil (2%) and ash (1%).

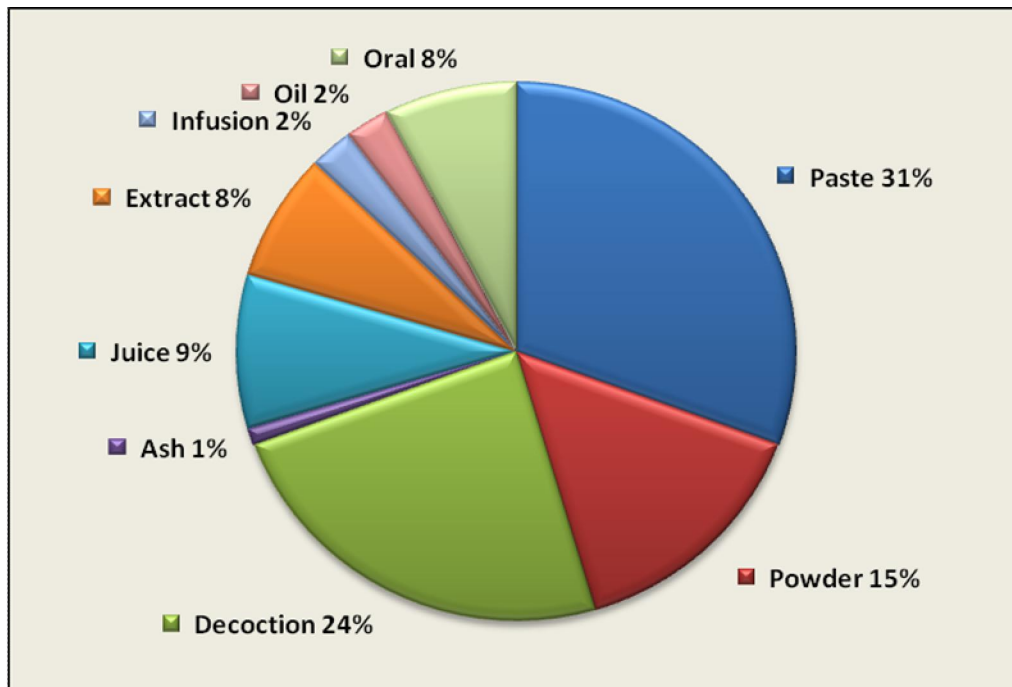


Figure 3. Different preparation methods

The plant parts/product used for medicinal purposes are shown in the Fig. 4, and the and the leaves (17.74%) may be concluded as the most frequently used part followed by bark (14.51%), roots, whole plant (12.90% each), seeds (9.67%), latex (8.06%), rhizome (6.45%), flowers (4.83%), gum, resin (3.22% each) and wood, branch, root bark (1.61% each).

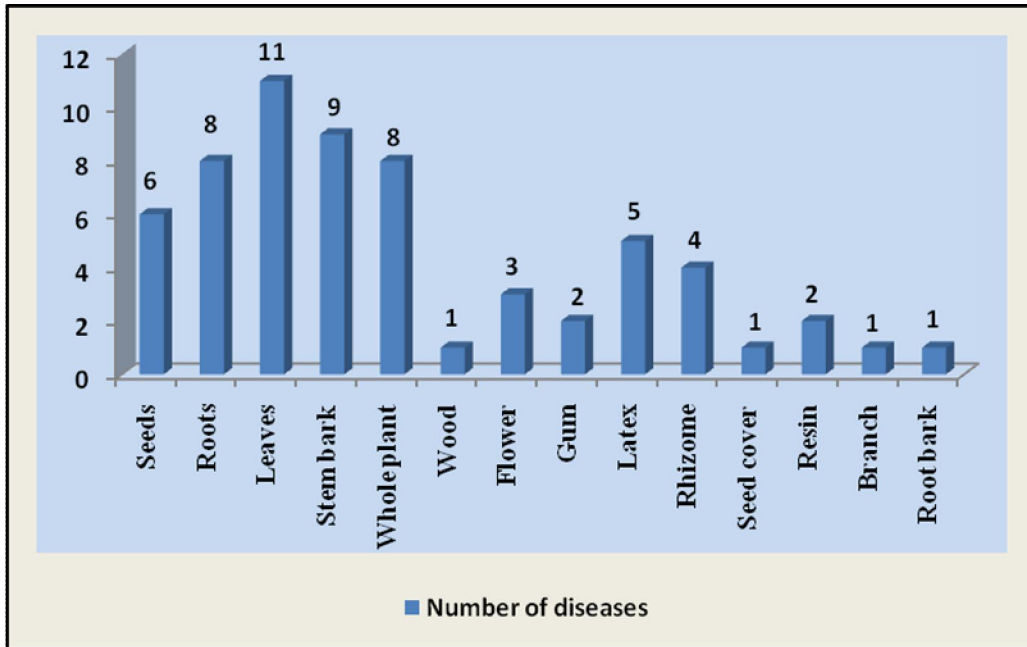


Figure 4. Plant parts used as medicine

The 184 traditional medicinal plants may cure 12 kinds of infectious diseases, among which the dysentery (28.07%) is the most common illness treated followed by Diarrhoea (21.92%), Skin disease (17.69%), Jaundice (9.23%), Ringworm (6.15%), Tuberculosis, Leprosy (4.61% each), Eczema (2.69%), Syphilis, Itches (1.92% each), Cholera (0.76%), Dandruff (0.38%) (Fig. 5).

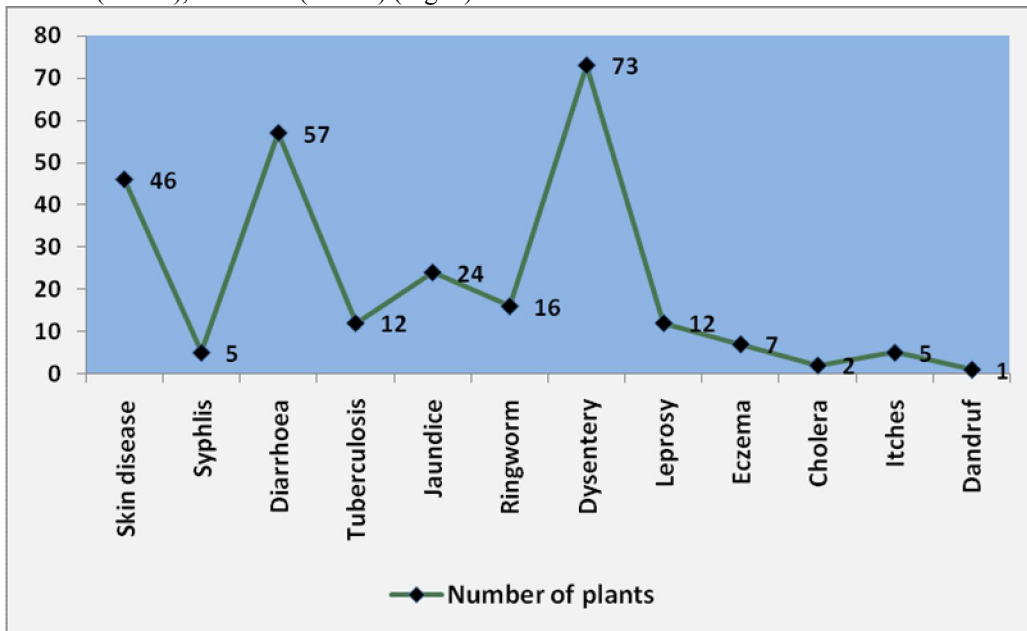
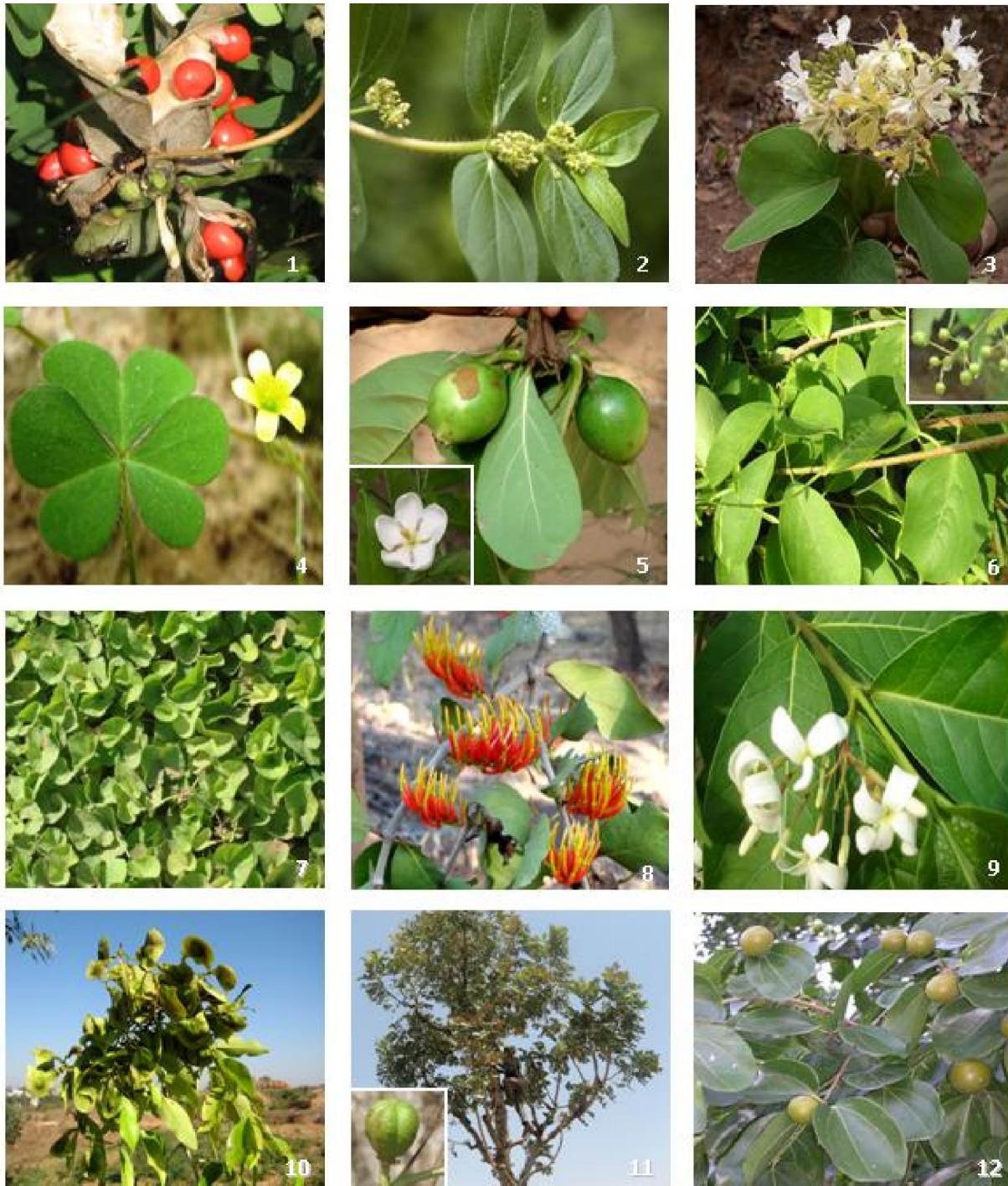


Figure 5. Diseases/symptoms cured by the 184 plants

Appendix Figures



Appendix Figures: **Fig. 1.** *Abrus precatorius* L.; **Fig. 2.** *Euphorbia hirta* L.; **Fig. 3.** *Bauhinia vahlii* Wight & Arn.; **Fig. 4.** *Oxalis corniculata* L.; **Fig. 5.** *Catunaregam uliginosa* (Retz.) Sivarajan; **Fig. 6.** *Celastrus paniculatus* Willd.; **Fig. 7.** *Centella asiatica* (L.) Urban; **Fig. 8.** *Dendrophthoe falcata* (L.f.) Etting.; **Fig. 9.** *Holarrhena pubescens* (Buch.-Ham.) Wall. ex G.Don; **Fig. 10.** *Pterocarpus marsupium* Roxb.; **Fig. 11.** *Soyimida febrifuga* (Roxb.) A.Juss.; **Fig. 12.** *Strychnos nux-vomica* L.

The local traditional medicinal knowledge and managing experiences which are practiced, accumulated and passed down from generation to generation may play a significant role in the sustainable use and development of plants resources. Nevertheless, along with the disappearing of biodiversity and negative effects of mainstream culture, the traditional/folk medicinal knowledge of many ethnic groups is facing the danger of losing. Furthermore, the losing of the traditional medicinal knowledge and culture which is the same as the disappearing of biodiversity is not a reversible process. Therefore, it is imperative to carry out the systematic investigation and research on the local traditional medicinal knowledge of Uttar Pradesh.

Table 1. Medicinal plants of Uttar Pradesh used in treatment of infectious diseases

Species Name	Field voucher no.	Local Name	Family	Habit	Parts used	Uses
<i>Abrus precatorius</i> L.	262601	Ghumchi, Ratti	Fabaceae	Climber	Seed and root	Seeds paste in skin diseases; roots paste in dandruff and extract in syphilis.
<i>Abutilon indicum</i> (L.) Sweet	262602	Kakai	Malvaceae	Shrub	Leaf and root	Powdered leaves in diarrhoea. Powdered roots in tuberculosis.
<i>Acacia catechu</i> (L.f.) Willd.	262603	Khair	Mimosaceae	Tree	Bark	Bark paste in skin diseases.
<i>Acacia leucophloea</i> (Roxb.) Willd.	262604	Rewenja, Rayunch	Mimosaceae	Tree	Bark and root	Bark decoction in diarrhoea. Powdered roots in jaundice.
<i>Acacia nilotica</i> (L.) Willd. ex Delile subsp. <i>indica</i> (Benth.) Brenan	262605	Babool	Mimosaceae	Tree	Leaf	Pounded leaves in jaundice.
<i>Acalypha indica</i> L.	262606	Khokali	Euphorbiaceae	Herb	Leaf	Leaves paste in ringworm.
<i>Acanthospermum hispidum</i> DC.	262607	-	Asteraceae	Herb	Leaf	Leaves paste in skin diseases.
<i>Achyranthes aspera</i> L.	262608	Chirchiri, Latjira	Amaranthaceae	Herb	Whole plant and root	Plant ash in jaundice. Powdered roots in dysentery.
<i>Adhatoda zeylanica</i> Medik.	262609	Adusa	Acanthaceae	Shrub	Leaf	Leaves decoction in tuberculosis and paste in ringworm.
<i>Agave americana</i> L.	262610	Patangwar	Agavaceae	Herb	Leaf	Pulp of leaves in skin diseases.
<i>Albizia lebbek</i> (L.) Benth.	262611	Siris	Mimosaceae	Tree	Leaf	Leaves juice in curing white spots on skin.
<i>Albizia odoratissima</i> (Willd.) Benth.	262612	-	Mimosaceae	Tree	Bark	Bark paste in leprosy, and other skin diseases.
<i>Ammannia baccifera</i> L.	262613	-	Lythraceae	Herb	Leaf	Leaves paste in skin diseases.
<i>Anagallis arvensis</i> L.	262614	Krishna neel	Primulaceae	Herb	Whole plant	Plants paste in leprosy.
<i>Apluda mutica</i> L.	262615	Sutara	Poaceae	Herb	Whole plant	Plants juice in dysentery.
<i>Ardisia solanacea</i> Roxb.	262616	-	Myrsinaceae	Shrub	Root	Roots decoction in diarrhoea.
<i>Argemone mexicana</i> L.	262617	Bharbhanda, Kateli	Papaveraceae	Herb	Whole plant and root	Plants juice in jaundice and skin diseases. Roots extract in itching.
<i>Argyrea nervosa</i> (Burm. f.) Bojer	262618	Samandar-ka-pat	Convolvulaceae	Climber	Leaf	Leaves paste in skin diseases.
<i>Asparagus racemosus</i> Willd.	262619	Satawar	Liliaceae	Herb	Root	Powdered roots in jaundice.
<i>Azadirachta indica</i> A.Juss.	262620	Neem	Meliaceae	Tree	Leaf and seed	Leaves decoction in skin diseases. Seeds oil in leprosy.
<i>Bacopa monnieri</i> (L.)	262621	Jalneem,	Scrophulariaceae	Herb	Whole	Plants decoction in

Wettst.		Brahmi			plant and seed	epilepsy. Seeds paste in skin disease.
<i>Balanites aegyptiaca</i> (L.) Delile	262622	Ingua, Hingot	Simaroubaceae	Small tree	Fruit	Fruits pulp in tuberculosis.
<i>Bambusa arundinacea</i> (Retz.) Willd.	262623	Bans	Poaceae	Tree	Wood	Wood oil in eczema.
<i>Bauhinia acuminata</i> L.	262624	Sivamalli	Caesalpiniaceae	Shrub	Bark	Bark decoction in leprosy.
<i>Bauhinia racemosa</i> Lam.	262625	Kachnal	Fabaceae	Small tree	Bark	Pounded bark powder in dysentery and diarrhoea.
<i>Bauhinia tomentosa</i> L.	262626	Kachnar	Caesalpiniaceae	Small tree	Leaf and flower	Dried leaves and flowers in dysentery.
<i>Bauhinia vahlii</i> Wight & Arn.	262627	Mohlain	Caesalpiniaceae	Liana	Bark and root	Bark decoction in dysentery and cholera. Roots extract in syphilis.
<i>Bauhinia variegata</i> L.	262628	Kachnar	Caesalpiniaceae	Small tree	Bark	Bark decoction in dysentery, leprosy, syphilis and other skin diseases.
<i>Boerhavia diffusa</i> L.	262629	Santan, Santh, Gadapurena, Punarnava	Nyctaginaceae	Herb	Leaf	Leaves decoction in jaundice. Cooked leaves in jaundice.
<i>Bombax ceiba</i> L.	262630	-	Bombacaceae	Tree	Fruit	Fruits in dysentery.
<i>Bridelia stipularis</i> (L.) Blume	262631	Khaji	Euphorbiaceae	Small tree	Leaf	Leaves decoction in jaundice.
<i>Buchanania lanzan</i> Spreng.	262632	Chirongi	Anacardiaceae	Tree	Leaf, gum, and seed	Leaves paste in skin diseases. Gum in diarrhoea. Seeds paste in skin diseases.
<i>Buddleja asiatica</i> Lour.	262633	Nayari	Loganiaceae	Shrub	Leaf	Leaves paste in eczema.
<i>Bulbostylis barbata</i> (Rottb.) C.B.Clarke	262634	-	Cyperaceae	Herb	Whole plant	Plant paste in dysentery.
<i>Butea monosperma</i> (Lam.) Taub.	262635	Chihula, Palas	Fabaceae	Small tree	Leaf, flower, bark and gum	Leaves paste in blood dysentery and ringworms. Flowers decoction in skin diseases. Bark decoction in dysentery. Gum in diarrhoea and dysentery.
<i>Butea parviflora</i> Roxb.	262636	Vyavhar	Fabaceae	Liana	Flower	Flowers decoction in skin disease.
<i>Cajanus cajan</i> (L.) Millsp.	262637	Arhar, Rahar	Fabaceae	Shrub	Leaf and root	Leaves paste in cholera and jaundice. Powdered leaves and roots in dysentery.
<i>Cajanus scarabaeoides</i> (L.) du Petit-Thouars,	262638	Bankulthi	Fabaceae	Shrub	Whole plant	Plants decoction in dysentery.
<i>Calotropis gigantea</i> (L.) R.Br.	262639	Akuaa	Asclepiadaceae	Shrub	Root	Powdered root bark in jaundice.
<i>Calotropis procera</i> (Aiton) R.Br.	262640	Madar	Asclepiadaceae	Shrub	Leaf and latex	Leaves paste on skin diseases. Latex in itching, eczema, ringworm, and leprosy.
<i>Capparis spinosa</i> L.	262641	Baferu	Capparaceae	Shrub	Root	Roots extract in jaundice.
<i>Capsella bursa-pastoris</i> (L.) Medik.	262642	-	Brassicaceae	Herb	Leaf	Leaves juice in dysentery.
<i>Carica papaya</i> L.	262643	Papita	Caricaceae	Tree	Latex	Latex in ringworm and jaundice.
<i>Casearia tomentosa</i> Roxb.	262644	Chilla	Samydaceae	Small tree	Bark	Bark juice in ringworm.
<i>Cassia absus</i> L.	262645	Chaksu	Caesalpiniaceae	Herb	Seed	Seeds paste in skin diseases.

<i>Cassia fistula</i> L.	262646	Amaltas	Caesalpiniaceae	Small tree	Leaf, Fruit and seed	Leaves paste in skin diseases. Fruits in dysentery. Powdered seeds in jaundice.
<i>Cassia obtusifolia</i> L.	262647	Panevar	Caesalpiniaceae	Herb	Root	Roots paste in ringworm.
<i>Cassia occidentalis</i> L.	262648	Chakwad	Caesalpiniaceae	Undershrub	Leaf	Leaves paste in skin disease.
<i>Cassia tora</i> L.	262649	Chakunda	Caesalpiniaceae	Undershrub	Whole plant and seed	Plants paste in skin diseases. Seeds paste on itches, eczema and ringworm.
<i>Cassine glauca</i> (Rottb.) Kuntze	262650	Mamar	Celastraceae	Tree	Root	Root bark extract in dysentery.
<i>Casuarina equisetifolia</i> L.	262651	Jhau, Jangli saru	Casuarinaceae	Tree	Bark	Bark decoction in diarrhoea and dysentery.
<i>Catunaregam uliginosa</i> (Retz.) Sivarajan	262652	Pindalu	Rubiaceae	Small tree	Fruit	Fruits in dysentery.
<i>Celastrus paniculatus</i> Willd.	262653	Unjan	Celastraceae	Liana	Fruit	Fruits paste in dysentery and diarrhoea.
<i>Celosia argentea</i> L.	262654	Safed murgaka phul	Amaranthaceae	Herb	Seed	Powdered seeds in diarrhoea and dysentery.
<i>Centella asiatica</i> (L.) Urban	262655	Brahmi-buti	Apiaceae	Herb	Whole plant	Plants decoction in skin diseases and leprosy.
<i>Chloroxylon swietenia</i> DC.	262656	Bharhul, Bharuee	Meliaceae	Tree	Bark	Bark decoction in jaundice.
<i>Cissampelos pareira</i> L.	262657	Batulia	Menispermaceae	Climber	Root	Roots extract in dysentery.
<i>Citrus medica</i> L.	262658	Neembu	Rutaceae	Shrub	Fruit	Fruits juice in dysentery.
<i>Clerodendrum cordatum</i> D.Don	262659	Bhat	Verbenaceae	Shrub	Bark	Powdered bark in skin diseases.
<i>Clitoria ternatea</i> L.	262660	Gokari, Aparajita	Fabaceae	Climber	Root	Powdered roots in dysentery.
<i>Cocculus hirsutus</i> (L.) Diels	262661	Charenti	Menispermaceae	Herb	Whole plant and Leaf	Plants decoction in dysentery. Leaves paste in eczema.
<i>Commelina diffusa</i> Burm.f.	262662	-	Commelinaceae	Herb	Whole plant	Plants paste on itches.
<i>Corchorus aestuans</i> L.	262663	Chench	Tiliaceae	Herb	Whole plant	Plants decoction in diarrhoea.
<i>Corchorus capsularis</i> L.	262664	Kharenti	Tiliaceae	Herb	Leaf	Leaves decoction in dysentery.
<i>Coriandrum sativum</i> L.	262665	Dhania	Apiaceae	Herb	Fruit	Powdered fruits in dysentery.
<i>Croton bonplandianus</i> Baill.	262666	-	Euphorbiaceae	Herb	Leaf	Leaves decoction in diarrhoea.
<i>Cuminum cyminum</i> L.	262667	Jeera	Apiaceae	Herb	Seed	Powdered seeds in diarrhoea.
<i>Curculigo orchioides</i> Gaertn.	262668	Kali-musali	Hypoxidaceae	Herb	Whole plant and root	Plants paste in jaundice and diarrhoea. Roots paste on itching and other skin diseases.
<i>Curcuma longa</i> L.	262669	Haldi	Zingiberaceae	Herb	Rhizome	Powdered rhizomes in skin diseases.
<i>Cynodon dactylon</i> (L.) Pers.	262670	Dubghas	Poaceae	Herb	Whole plant	Plants paste in leprosy.
<i>Dendrophthoe falcata</i> (L.f.) Etting.	262670	Banda	Loranthaceae	Shrub	Whole plant	Plants extract in tuberculosis.
<i>Desmodium triflorum</i> (L.) DC.	262672	Throughout years	Fabaceae	Herb	Leaf	Leaves paste in diarrhoea and dysentery.
<i>Diospyros exsculpta</i>	262673	Tendu or	Ebenaceae	Shrub	Fruit	Fruits pulp in dysentery and

Buch-Ham.		Kundi				diarrhoea.
<i>Diospyros malabarica</i> (Ders.) Kostel	262674	Tendu	Ebenaceae	Tree	Bark	Powdered bark in dysentery.
<i>Emblica officinalis</i> Gaertn.	262675	-	Euphorbiaceae	Tree	Bark	Bark decoction in diarrhoea, dysentery and cholera.
<i>Euphorbia hirta</i> L.	262676	Dudhi	Euphorbiaceae	Herb	Whole plant	Plants juice in dysentery.
<i>Euphorbia thymifolia</i> L.	262677	Lal dudhi	Euphorbiaceae	Herb	Whole plant	Plants decoction in blood dysentery.
<i>Feronia limonia</i> L.	262678	Kaith	Rutaceae	Tree	Fruit	Fruits in diarrhoea and dysentery.
<i>Ficus benghalensis</i> L.	262679	Bargad	Moraceae	Tree	Bark	Bark infusion in diarrhoea and dysentery.
<i>Ficus glomerata</i> Roxb.	262680	Gular	Moraceae	Tree	Fruit	Fruits infusion in diarrhoea and dysentery.
<i>Ficus heterophylla</i> L.f.	262681	Traymana	Moraceae	Shrub	Leaf	Leaves juice in dysentery.
<i>Ficus racemosa</i> L.	262682	Gular	Moraceae	Tree	Latex and fruit	Latex in dysentery. Fruits in diarrhoea.
<i>Flacourtia indica</i> (Burm.f.) Merr.	262683	Rakatsank, Kateyya	Flacourtiaceae	Small tree	Bark and fruit	Bark decoction in dysentery and eczema. Fruits juice in jaundice.
<i>Flacourtia jangomas</i> (Lour.) Raeusch.	262684	Paniyala	Flacourtiaceae	Small tree	Leaf	Leaves paste in diarrhoea.
<i>Hamelia patens</i> Jacq.	262685	-	Rubiaceae		Fruit	Berries-syrup in dysentery.
<i>Hedychium coronarium</i> Buch.-Ham.	262686	Seerh	Zingiberaceae	Shrub	Rhizome	Powdered rhizomes in diarrhoea.
<i>Helicteres isora</i> L.	262687	Murerua or Rasbhari or Aithan	Sterculiaceae	Shrub	Fruit, bark and seed	Fruits paste in dysentery. Bark in diarrhoea and dysentery. Seeds paste in dysentery.
<i>Hemidesmus indicus</i> (L.) R.Br.	262688	Cherdudhia	Asclepiadaceae	Herb	Leaf and root	Leaves infusion in diarrhoea. Roots extract in eczema and ringworm infection.
<i>Hibiscus rosa-sinensis</i> L.	262689	Gurhal	Malvaceae	Shrub	Flower	Flowers extract in tuberculosis.
<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall. ex G.Don	262690	Chirol	Apocynaceae	Shrub	Bark	Bark decoction in dysentery; paste in diarrhoea.
<i>Holoptelea integrifolia</i> (Roxb.) Planch.	262691	Chilbil	Ulmaceae	Tree	Leaf	Leaves paste in ringworm.
<i>Hyptis suaveolens</i> (L.) Poit.	262692	Bantulsi	Lamiaceae	Herb	Seed	Seeds oil in skin diseases.
<i>Indigofera astragalina</i> DC.	262693	Hairy Indigo	Fabaceae	Herb	Leaf	Leaves decoction in diarrhoea.
<i>Indigofera linnaei</i> Ali	262694	Latahai	Fabaceae	Herb	Leaf	Leaves decoction in diarrhoea.
<i>Ipomoea eriocarpa</i> R.Br.	262695	Nakhari	Convolvulaceae	Twiner	Whole plant	Plants paste in leprosy.
<i>Ipomoea nil</i> (L.) Roth	262696	Paturia/ Kala dana	Convolvulaceae	Climber	Seed	Pounded seeds in diarrhoea.
<i>Jacaranda mimosaeifolia</i> D.Don	262697	Nila gulmohar	Bignoniaceae	Tree	Leaf and bark	Leaves in syphilis.
<i>Jasminum humile</i> L.	262698	Pili - Chameli	Oleaceae	Shrub	Root	Roots paste in ringworm.
<i>Jatropha curcas</i> L.	262699	Rtanjot	Euphorbiaceae	Shrub	Bark	Powdered bark in dysentery

						and tuberculosis.
<i>Jatropha gossypifolia</i> L.	262700	Banren	Euphorbiaceae	Shrub	Leaf	Leaves paste in eczema and itches.
<i>Kigelia africana</i> (Lam.) Benth.	262701	Balamkhira	Bignoniaceae	Tree	Fruit	Fruits paste in skin diseases.
<i>Kyllingia brevifolia</i> Rottb.	262702	-	Cyperaceae	Herb	Leaf	Powdered leaves in diarrhoea.
<i>Lablab purpureus</i> (L.) Sweet	262703	Sem	Fabaceae	Climber	Leaf	Leaves paste on skin diseases.
<i>Lannea coromandelica</i> (Houtt.) Merr.	262704	Jingna	Anacardiaceae	Tree	Bark	Bark decoction in skin disease.
<i>Lawsonia inermis</i> L.	262705	Mehandi	Lythraceae	Shrub	Leaf	Leaves juice in dysentery.
<i>Leonotis nepetifolia</i> (L.) R.Br.	262706	Baraguma, Hejurchei	Lamiaceae	Herb	Flower	Flowers paste in skin infection.
<i>Leucas cephalotes</i> (Koenig ex Roth) Spreng.	262707	Gumma	Lamiaceae	Herb	Leaf	Leaves decoction in dysentery and diarrhoea.
<i>Limonia acidissima</i> L.	262708	Kaitha/Kait	Rutaceae	Tree	Fruit	Fruits pulp in diarrhoea and dysentery.
<i>Lindenbergia muraria</i> (Roxb. ex D.Don) Bruehl	262709	-	Scrophulariaceae	Herb	Leaf	Powdered leaves in tuberculosis.
<i>Lindernia crustacea</i> (L.) F.v.Muell.	262710	-	Scrophulariaceae	Herb	Whole plant	Plants in dysentery and ringworm.
<i>Ludwigia adscendens</i> (L.) Hara	262711	-	Onagraceae	Herb	Whole plant	Plants paste in skin diseases.
<i>Ludwigia octovalvis</i> (Jacq.) Raven	262712	-	Onagraceae	Herb	Whole Plant	Plants extract in diarrhoea.
<i>Luffa acutangula</i> (L.) Roxb.	262713	Satputia	Cucurbitaceae	Climber	Leaf	Leaves paste in leprosy.
<i>Mallotus philippensis</i> (Lam.) Muell. Arg.	262714	Rohini	Euphorbiaceae	Tree	Leaf, fruit and bark	Leaves paste in skin diseases. Powdered fruits in dysentery. Bark decoction in jaundice.
<i>Malvastrum coromandelianum</i> (L.) Garcke	262715	Bariara	Malvaceae	Herb	Seed	Seeds decoction in dysentery.
<i>Mangifera indica</i> L.	262716	Aam	Anacardiaceae	Tree	Bark and fruit	Fruits pulp in dysentery. Bark decoction in jaundice.
<i>Martynia annua</i> L.	262717	Biswat	Martyniaceae	Shrub	Seed	Seeds oil in eczema and other skin diseases.
<i>Medicago polymorpha</i> L.	262718	Jangli ghas	Fabaceae	Herb	Leaf	Leaves decoction in dysentery.
<i>Melilotus indica</i> (L.) All.	262719	Senji	Fabaceae	Herb	Seed	Seeds in diarrhoea.
<i>Melochia corchorifolia</i> L.	262720	Bilpat	Sterculiaceae	Undershrub	Leaf	Leaves decoction in dysentery.
<i>Mimusops elengi</i> L.	262721	Maulsiri	Sapotaceae	Tree	Bark	Bark decoction in dysentery.
<i>Nelumbo nucifera</i> Gaertn.	262722	Kamal	Nelumbonaceae	Herb	Rhizome	Powdered rhizomes in diarrhoea and dysentery.
<i>Nymphaea nouchali</i> Burm.f.	262723	Kamal	Nymphaeaceae	Herb	Rhizome	Powdered rhizomes in dysentery and diarrhoea.
<i>Ochna pumila</i> Buch.-Ham. ex D.Don	262724	Bhuikusum	Ochnaceae	Undershrub	Root	Roots decoction in dysentery and diarrhoea.
<i>Operculina turpethum</i> (L.) Manso	262725	Pipal pant	Convolvulaceae	Climber	Leaf	Leaves sap in itching and ringworm.
<i>Oroxylum indicum</i> (L.) Venten	262726	-	Bignoniaceae	Tree	Leaf, bark and	Leaves decoction in diarrhoea. Bark decoction in

					root	jaundice. Roots decoction in dysentery.
<i>Ougeinia oogeinensis</i> (Roxb.) Hochr.	262727	Sanan	Fabaceae	Tree	Bark	Bark decoction in dysentery and diarrhoea.
<i>Oxalis corniculata</i> L.	262728	Khatibuti, Khatamithi, Teeapatiya	Oxalidaceae	Herb	Leaf	Leaves decoction in dysentery.
<i>Peltophorum pterocarpum</i> (DC.) Baker ex K. Heyne	262729	Copper pod	Caesalpiniaceae	Tree	Bark	Powdered bark in dysentery.
<i>Phanera integrifolia</i> (Roxb.) Benth.	262730	Mohlain	Caesalpiniaceae		Root	Roots extract in syphilis.
<i>Phyllanthus virgatus</i> Forst.f.	262731	Banaunri	Euphorbiaceae	Herb	Leaf	Leaves juice in dysentery.
<i>Pistia stratiotes</i> L.	262732	Pistia, Jalkumbhi	Araceae	Herb	Leaf	Leaves juice in skin diseases.
<i>Plantago ovata</i> Forssk.	262733	Isaphgol	Plantaginaceae	Herb	Seed cover	Husk in dysentery and diarrhoea.
<i>Pongamia pinnata</i> (L.) Pierre	262734	Karanj	Rhamnaceae	Tree	Seed	Powdered seeds in ringworm.
<i>Premna latifolia</i> Roxb.	262735	Bakar	Verbenaceae	Small tree	Bark	Bark extract in ringworm.
<i>Prosopis cineraria</i> (L.) Druce.	262736	Chaonka	Mimosaceae	Small tree	Leaf	Leaves paste in ringworm.
<i>Psidium guajava</i> L.	262737	Amrood	Myrtaceae	Small tree	Leaf	Leaves extract in cholera, diarrhoea and dysentery.
<i>Pterocarpus marsupium</i> Roxb.	262738	Vijasal	Fabaceae	Tree	Leaf	Leaves paste in skin diseases.
<i>Quisqualis indica</i> L.	262739	Malti	Combrataceae	Tree	Seed	Seeds in diarrhoea.
<i>Raphanus sativus</i> L.	262740	Mooli	Brassicaceae	Herb	Root	Roots juice in jaundice
<i>Ricinus communis</i> L.	262741	Rendi	Euphorbiaceae	Small tree	Leaf	Leaves decoction in jaundice.
<i>Rivea hypocrateriformis</i> (Desr.) Choisy	262742	Phang	Convolvulaceae	Climber	Leaf and seed	Leaves paste in tuberculosis. Powdered seeds in tuberculosis.
<i>Saccharum officinarum</i> L.	262743	Ikh	Poaceae	Herb	Whole plant	Plants juice in jaundice.
<i>Sapindus trifoliatus</i> L.	262744	Reetha	Sapindaceae	Tree	Fruit	Fruits paste in leprosy.
<i>Saraca asoca</i> (Roxb.) de Wilde	262745	Ashok	Caesalpiniaceae	Tree	Flower	Flowers infusion in blood dysentery.
<i>Scoparia dulcis</i> L.	262746	Sweet broom weed	Scrophulariaceae	Herb	Leaf	Powdered leaves in diarrhoea.
<i>Selaginella bryopteris</i> (L.) Bak.	262747	Kamraj	Selaginellaceae	Herb	Whole plant	Plants paste in dysentery.
<i>Semecarpus anacardium</i> L.f.	262748	Bhela	Anacardiaceae	Tree	Resin	Gum-resin in leprosy and skin diseases.
<i>Shorea robusta</i> Roxb. ex Gaertn.f.	262749	Sal, Sakhul	Dipterocarpaceae	Tree	Fruit and gum	Fruits paste in dysentery. Gum in dysentery.
<i>Sida cordata</i> (Burm.f.) Borss.	262750	Baharbuta	Malvaceae	Herb	Whole plant	Plants extract in dysentery.
<i>Sida rhombifolia</i> L.	262751	Sahadevi	Malvaceae	Herb	Whole plant	Plants powder in tuberculosis.
<i>Solanum nigrum</i> L.	262752	Makoi	Solanaceae	Herb	Whole plant and leaf	Plants juice in diarrhoea and decoction in jaundice. Leaves paste in skin diseases and decoction in jaundice.
<i>Solanum surattense</i> Burm.f.	262753	Kantakeri	Solanaceae	Herb	Flower	Flowers juice in diarrhoea.
<i>Solanum viarum</i>	262754	-	Solanaceae	Herb	Fruit	Fruits extract in jaundice.

Dunal						
<i>Sonchus wightianus</i> DC.	262755	Gobhi	Asteraceae	Herb	Root	Powdered roots in tuberculosis.
<i>Soyimida febrifuga</i> (Roxb.) A.Juss.	262756	-	Meliaceae	Tree	Bark	Bark decoction in diarrhoea.
<i>Spathodea campanulata</i> P.Beauv.	262757	Rugtoora	Bignoniaceae	Tree	Bark	Bark paste in skin diseases and dysentery.
<i>Spergula arvensis</i> L.	262758	-	Caryophyllaceae	Herb	Whole plant	Plants in tuberculosis.
<i>Spondias pinnata</i> (L.f.) Kurz	262759	Amra, Wild Mango	Anacardiaceae	Tree	Bark	Bark decoction in diarrhoea and dysentery.
<i>Stephania japonica</i> (Thunb.) Miers	262760	Vanatikatika	Menispermaceae	Herb	Root	Roots decoction in diarrhoea.
<i>Streblus asper</i> Lour.	262761	Sihoor	Moraceae	Tree	Bark	Bark decoction in diarrhoea and dysentery.
<i>Strychnos nux-vomica</i> L.	262762	Kuchila	Loganiaceae	Tree	Seed	Seeds paste in eczema and ringworm.
<i>Syzygium cumini</i> (L.) Skeels	262763	-	Myrtaceae	Tree	Bark	Bark juice in diarrhoea.
<i>Syzygium heyneanum</i> Wall. ex Duthie	262764	Jamati	Myrtaceae	Tree	Bark	Bark paste in dysentery.
<i>Tecomaria capensis</i> (Thunb.) Spach	262765	-	Bignoniaceae	Shrub	Leaf	Leaves decoction in diarrhoea.
<i>Tephrosia purpurea</i> (L.) Pers.	262766	Sarpokha	Fabaceae	Herb	Leaf	Leaves paste in skin diseases.
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn.	262767	Arjun	Combrataceae	Tree	Bark	Bark decoction in dysentery, jaundice and cholera.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	262768	Bahera	Combrataceae	Tree	Fruit	Powdered fruits in leprosy and diarrhoea.
<i>Terminalia chebula</i> Retz.	262769	Harra	Combrataceae	Tree	Fruit and seed	Fruits paste in dysentery and diarrhoea. Seeds powder in diarrhoea.
<i>Thalictrum foliolosum</i> DC.	262770	Supowa	Ranunculaceae	Herb	Root	Roots extract in dysentery and diarrhoea.
<i>Thespesia populnea</i> (L.) Soland. ex Corrêa	262771	Parsipu	Malvaceae	Small tree	Bark and seed	Seeds paste in skin troubles. Bark in dysentery.
<i>Thuja orientalis</i> L.	262772	Morpankhi	Cupressaceae	Small tree	Leaf	Leaves ash in dysentery.
<i>Toona ciliata</i> M.Roem.	262773	Tun, Mahaneem	Meliaceae	Tree	Bark	Bark paste in dysentery.
<i>Trachyspermum ammi</i> (L.) Sprague	262774	Ajwain	Apiaceae	Herb	Seed	Seeds paste in diarrhoea.
<i>Urtica dioica</i> L.	262775	Bichhughas	Urticaceae		Whole plant	Plants decoction in jaundice.
<i>Verbascum chinense</i> (L.) Sant.	262776	-	Scrophulariaceae	Herb	Leaf	Leaves juice in skin disorders.
<i>Veronica anagallis-aquatica</i> L.	262777	Titlokia	Scrophulariaceae	Herb	Root	Roots decoction in diarrhoea.
<i>Vitis vinifera</i> L.	262778	Angur	Vitaceae	Climber	Branch	Sap of young branches in skin infections.
<i>Wahlenbergia marginata</i> (Thunb.) DC.	262779	-	Campanulaceae	Herb	Whole plant	Plants paste in skin troubles.
<i>Xanthium indicum</i> Koenig	262780	Bichchu, Gokharu, Kaktoni	Asteraceae	Herb	Leaf and seed	Leaves juice in ringworms. Seeds oil in skin diseases.
<i>Zingiber officinale</i> Roscoe	262781	Adrak	Zingiberaceae	Herb	Rhizome	Powdered rhizomes in tuberculosis.
<i>Ziziphus mauritiana</i>	262782	Ber	Rhamnaceae	Small tree	Seed	Seeds decoction in

Lam.						diarrhoea.
<i>Ziziphus oenoplia</i> (L.) Mill.	262783	Jharberi	Rhamnaceae	Shrub	Fruit	Fruits paste in dysentery.
<i>Ziziphus xylopyra</i> Willd.	262784	Guthar	Rhamnaceae	Small tree	Root bark	Roots bark extract in dysentery.

4. Conclusions

The study is of great importance to preserve the knowledge of medicinal plants used by the tribal people and exploit the knowledge in treatment of various diseases. Moreover, further phytochemical and pharmacological studies of little noticed medicinal plants are an urgent need to understand the underlying mechanism of traditional treatment systems. On the other hand, these plants hold tremendous potentials for pharmaceutical products of commercial values. The search for new biologically active compounds from plants usually starts in the field and depends on the specific ethnic and folk information obtained from local practitioners. The conservation of the medicinal plants is an essential requirement for maintaining traditional medicine as a medicinal and cultural resource.

Acknowledgments:

The authors express thanks to the local communities for revealing their traditional medical knowledge for the benefit of everyone. Authors are also thankful to the Director, NBRI, Lucknow for providing facilities to carry out research work and NAIP, ICAR, New Delhi for providing Research Associateship to the first author.

Corresponding Author:

Dr. Achuta Nand Shukla
Botanical Survey of India, Northern Regional Centre,
192-Kaulagarh Road, Dehradun-248195, India
E-mail: achutbsi@gmail.com

References

- World Health Organization (WHO). Deaths by cause, sex and mortality stratum in WHO Regions, estimates for 2001. www.wpro.who.int/health_topics/traditional_medicine, 2002.
- Infectious disease, MacGraw-Hill Encyclopedia of Science and Technology. The McGraw-Hill Companies, Inc, 2005.
- Posey D. Traditional knowledge, conservation and "The Rain Forest Harvest". In Sustainable Harvest and Marketing of Rain Forest Products, 1989.
- Reddy CS, Prasad PRC, Raza SH, Dutt CBS. Folklore medicinal plants of North Andaman, India Natl Acad Sci Lett 2008;31(9&10): 269-276.
- Jain SK, Rao RR. Handbook of Field and Herbarium Methods. Goyal Offsets, Delhi, 1977.
- Brummitt RK, Powell CE. Authors of plant names: a list of authors of scientific names of plants, with recommended standard forms of their names, including abbreviations, Kew, Royal Botanic Gardens, 1992.
- Uniyal BP, Balodi B, Nath B. Grasses of Uttar Pradesh-A checklist. Bishen Singh Mahendra Pal Singh, Dehradun, 1994.
- Uniyal SK, Swami A, Uniyal BP. Cyperaceae of Uttar Pradesh-A checklist. Bishen Singh Mahendra Pal Singh, Dehradun, 1997.
- Uniyal SK, Swami A, Uniyal BP. Monocotyledonous plants of Uttar Pradesh-(Excluding Cyperaceae & Poaceae) A-checklist. Bishen Singh Mahendra Pal Singh, Dehradun, 1999.
- Khanna KK, Mudgal V, Uniyal BP, Sharma JR. Dicotyledonous plants of Uttar Pradesh-A checklist. Bishen Singh Mahendra Pal Singh, Dehradun. 1999.

7/1/2013