Traditional remedies used by migrant and local people in fever by plant species of Tarai region of Kumaun, Uttarakhand

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There are a number of medicinal herbs that have a long history of use as a natural treatment for fever, as well as traditional herbal combinations that are pleasant to the taste and provide a number of benefits when suffering from fever and chills. In holistic tradition, herbs are not used to reduce fever unless there is also some positive benefit in treating the infection or inflammation that is causing the fever. Many practitioners see fever as the body’s natural response to a pathogen. Fever has been shown to stimulate immune system production of antibodies and may also enhance the body’s elimination of toxins. If a fever is suppressed, the individual loses the advantages from the body’s natural defense system, and the illness may last longer. Therefore, herbalists try to use herbs that support the immune system and enhance other cleansing processes of the body. The present study had been conducted in tarai region in the year 2008 to 2011 in three sites and eight communities. Total 29 plant species were identified to cure fever. These plant species were used in different type of fever as in typhoid, tertian and in malarial fever. *Datura alba*, *Allium cepa*, *Capsicum annum* were reported first time from the study area.

Keywords: Fever, Ethnobotany, Tarai region, Kumaun, Uttarakhand

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The state Uttarakhand represents central Himalaya which comprises of Kumaun and Garhwal divisions, and includes overlapping of western and eastern Himalayan flora. It is bordered to the North west by the Indian state of Himachal Pradesh, to the North east by the Tibet Autonomous Region of China, to the South east by Nepal, to the South and South west by the Indian state of Uttar Pradesh, and to the West by a tiny segment of the Indian state of Haryana. Uttarakhand surrounded by huge mystic mountains, green lush valleys, rhythmic rivers, divine shrines, is the home to innumerable flora and fauna. In the Kumaun region of Central Himalaya, the foot-hill region includes unique physiographic ecosystems as bhabar, tarai, Siwalik and doon with distinct lithological variations. Characterized by marked absence of water and vast beds of moderate to heavy boulder detritus under the thin porous gravel alluvial soil, the bhabar lies immediately at the hill base. In contrast to bhabar the tarai region is a water-logged alluvial plain with gentle South east slope and deep and fertile moist alluvial loamy soil forming marshy land free from boulders and gravels. In recent year the central tarai region due to bio-edaphic factor and developmental activities, as conversion of natural forests to human-controlled mono-species plantations of industrial and non-industrial uses, excessive agriculture, and more recently industrialization, has experienced remarkable anthropogenic influences that have also affected the flora of the area. The region is also characterized now with settlements of human beings of different culture from eastern Uttar Pradesh, Bihar, West Bengal, adjacent Nepal and war refugees besides the Kumauni migrants from district Nainital, Pithoragarh, Almora and Bageshwar prominently.

Some notable ethnobotanical studies are available for the mountainous region of Indian Central Himalaya. From the other region the work reported by different workers. A perusal of published literature indicates almost complete absence of ethnobotanical (plant species used in fever) investigations for the tarai region. So the present study is an effort to document the plant species of tarai region which is used in fever.
Material and methods

The study was conducted in the central tarai region of Kumaun Himalaya in Lalkuan (Nainital district) and Kichha tehsil (covering Pantnagar) of district Udham Singh Nagar as these occupy major part of central tarai. Geographically, the area is located approximately between 28°4’ - 29°05’ N latitude and 79°18’ - 79°31’E longitude with altitude ranging from 200 to 256 m msl. Whereas on the one hand, Udham Singh Nagar is basically an industrial district and many industry related professions are prevalent here, it is perfect example of ‘Unity in Diversity’ for which India is so widely known, on the other hand different cultures, religions and life styles are blended in absolute harmony. Site Lalkuan starts just after the bhabar of foot hill region. Lalkuan is well known for its paper mill industry and timber tallls. Due to paper mill industry there are monoculture plantation occupied the major part of the study area. Between Lalkuan and Kichha, Pantnagar University of Agriculture and Technology is situated and agricultural and farm land is there. The area is water–logged alluvial plain with gentle South east slope. The water is very close to ground surface 30 cm deep at some places. Soils of the tarai region have developed from materials deposited during late Pleistocene and recent times on a gently sloping outwash plain which occurs as a belt below and a few km South of the foothills or outer range of the Himalayan mountains. The regions are ensheathed by somewhat tropical and sub-tropical vegetation dominated by Shorea robusta C.F. Gaertn., Dalbergia sissoo Roxb. ex DC., Acacia catechu (L. f.) Willd., Albizia lebbeck (L.) Benth., A. amara (Roxb.) B. Boivin and A. procera (Roxb.) Benth. and Phragmites-Saccharum-Imperata grassland The area is strongly influenced by monsoon with three distinct seasons in a year. The summer season extends from March to mid June, mid June to September constitute rainy season and October to February is the winter season. The climate is bixeric. (The mean monthly minimum temperature varies between 6.3 °C (December) to 25 °C (August), while the maximum temperature from 20 °C (January) to 37.9 °C (May). The total annual rainfall is about 1200 mm, 70 % of which occur during monsoon (July to September) the relative humidity is highest (92.9%) during January and least (56.8%).

The entire study area is divided in to three sites, i.e., site I (Pantnagar), site II (Kichha) and site III (Lalkuan) and eight communities, viz. natural forests, plantations, agroecosystem, grassland, savanna, amphibious sites (marsh-meadow), water land and road sides. The study was conducted as per prescribed standard methodology of ethnobotanical studies. For the ethnobotanical information oral communication were made with local inhabitants and migrant people. They were interviewed following a questionnaire already prepared. Prior consent was taken from the informants. PRA exercise was applied to collect the field data, covering all the seasons of a year (i.e., summer, rainy, winter and spring). The vegetation surveys were conducted for entire growth period for once in a 15 days in all the seasons, as each species has its own seasonality throughout the year. During field survey collection were made and photographs of most of the plant species with their characteristic features were taken along with field notes on habitat characteristic and identification features of the species. The study area included number of villages and slum areas as Shantipuri, Anandpur, Jawahar nagar, Indra colony, Sanjay colony and Jha colony, etc. The plant survey covered an area about 25-30 km in each side. Patience and familiarization with regional people and their behaviour is prerequisite for collecting real information about the ethnological aspect of biological species. The informants were interviewed in their own houses in nearby places falling within the study area where they would normally go to collect fodder, fuel, etc., In all the above locations informants were interviewed individually. They were found always willing to share their knowledge in this regard; therefore they gave their consents very easily, their name, age and village names were noted.

A total of 135 people of different age group, economy class and activity, migrants and non-migrants were interviewed for relevant information on availability and occurrence of species, use values part(s) used seasonality of ethnobotanical use and mode of utilization. The information, thus collected, was used to express species diversity for each plant community type. The species so collected were preserved for taxonomic identification following research publications. The identified specimens were further confirmed by comparing them with reference specimens preserved in the herbaria of Kumaun University, Nainital; Forest Research Institute, Dehra Dun and Northern Circle of Botanical Survey of India, Dehra Dun. Voucher specimens were submitted in the Department of Botany, Kumaun University Nainital, Almora Campus (Uttarakhand).
**Results and discussion**

During the ethnobotanical study in tarai region, the number total plant species found in the study area were 429 in which 378 plant species were used for ethnobotanical purposes. The number of species used to cure fever was 29 in which five plant species were reported first time from the area. The name of the other plant species used to treat fever *Aegle marmelos* (L.) Corr. as unripe fruits, *Neolamarckia cadamba* (Roxb). Bosser, bark is used as tonic and reduced fever. *Cassia fistula* L., the fruit pulp is used twice a day for 3 days as a laxative in fever. *Pongamia* *pinnata* L., stem bark is used in malarial fever. Species *Tamarindus indica* L. fruit pulp is recommended in fever. *Aloe vera* L. leaf pulp is used in bronchial fever. *Calotropis procera* (Aiton) R.Br. grounded root is used in malaria fever. *Carissa carandas* L. fruit reduces fever, *Cassia tora* L. decoction of leaves and fruit pulp for three days is used as laxative in fever. *Clerodendrum viscosum* Vent. leaf juice is used in malaria fever. *Hibiscus rosa sinensis* L. decoction of leaves is employed as lotion in fever and decoction of root is recommended in fever. *Lawsonia inermis* L. decoction made from leaves is used to treat fever. *Punica granatum* L. fresh fruit juice is given to the patient who has weakness after fever. *Thuja occidentalis* L. essential oil yield from the leaf used to restore health and for reducing fever. *Andrographis paniculata* Burm.f., whole plant is used as tonic in the treatment of fever and juice from the leaves is useful for children suffering from fever. *Blumea lacera* (Burm. f.) DC. leaf juice is used for fever reduction, *Cuscuta reflexa* Roxb. whole plant is internally used in fever. *Ocimum canum* Sims decoction of whole plant is taken in fever. *Oxalis corniculata* L. leaf juice is used in malaria. *Piper nigrum* L. / *Kala mirch*/Chillies/Fruit

**A plaster which cures viral fever**

*Capsicum annuum* L., *Solanaceae*, Herb, *Mircha*, *kalimirch*/Fruit

Community mainly consists of migrants from Bihar, West Bengal, adjacent Nepal and local people. The number of people is thirty seven who told about the use of this plant species.

Soak 3 chilies in water then rub them finely and apply it on the index finger of the left hand supported by muslin in bandage which should all along be kept drenched with water. An unbearable pain in the finger will ensue and heart palpitates following its application but the patient should be kept informed of it in advance and asked to keep patience. If there is no desired effect on the first day, the application should be tried on the following day again. The device should be made use of two hours before the time of paroxysm of the fever and it would certainly prove useful.

**For simple fever**

*Cyperus rotundus* L. / *Cyperaceae*, *Sedge* / *Motha* / *Rhizom*

Community mainly consists of migrants from Uttar Pradesh, war refugees besides the *Kumauni* migrants from district Nainital, Pithoragarh, Almora and Bageshwar prominently. The number of people is fifty five who told about the use of this plant species.

Rhizome of 3-4 plants are mixed with10 gm powdered *kalimirch* (*Piper nigrum* L.) and given one spoon in the morning every day for 1 week in a simple fever.

**For tertian fever**

*Datura alba* Nees./*Solanaceae*, Herb/Kala dhatura/Datura Black current Swirl/Fruit, leaf

Community mainly consists of migrants from Uttar Pradesh, Bihar and adjacent Nepal and local people
(mainly Kumauni). The number of people is twenty eight who told about the use of this plant species.

(i) Desire quantity (one and half kg) of Datura fruit is placed in an earthen pot and covered it with a plaster composed of cloth and clay and put it to be parched in 10-12 kg of cow dung cakes. When the fire gets extinguished and the pot is cold the burnt fruit should be secured from within the pot, powdered and kept it safely in a phial: the desired medicine is thus ready. 1-10 grains of the powdered ash should be administered wrapped in a betel leaf 1 hr before the time of the paroxysm. Doses may be varied according to the age and general physique of the patient. The medicine can very well be used with water where betel leaf is not available. It is very useful in tertian fever.

(ii) Another recipe-Two and half freshly sprouted leaves of the Datura plant should be made in to a pill by rubbing them with little quantity of gur (jaggery) and administered 2 hrs before the onset of the paroxysm.

For chronic and typhoid fever

_Tinospora cordifolia_ (Wildl). Hook. f. & Thomson/ Menispermacaeae, Herb/ _Gilo, giloe/Stem bits_

Community mainly consists of migrants from Uttar Pradesh, Bihar and adjacent Nepal and local people (mainly Kumauni). The number of people is twenty one who told about the use of this plant species.

After making decoction of desire quantity of stem bit (with water) and 100 gm _pipali_ (Piper longum L.) powder is added. One spoon daily is taken for a week to cure chronic fever.

In typhoid fever 2 gm of stem-bits are chewed twice a day for 20 days.

Present paper deals with 29 plant species used for different types of fevers by local and migrant people of the study area. The authors themselves have collected this information during an extensive survey of the study area. A comparison of the data so gathered, with the relevant information obtained from elsewhere shows very interesting results. Fourteen plant species reported, used in fever but all the species were different reported from the tarai region. Comparison with Ethnobotany of other regions only _Calotropis procera_ and few plant species were commonly used to cure fever by the tribal of Madhya Pradesh. Other species were used as _Cassia fistula_ and _C. tora_ in Patalkot Valley and _Tinospora cordifolia_ and _Hibiscus rosa sinensis_ had the same use.

Conclusion

According to World Health Organization (WHO) more than 80% of the world's population relies on traditional medicine for their primary healthcare needs. Use of herbal medicines in Asia represents a long history of human interactions with the environment. Thus the data gathered by the authors is significant as it provides new information regarding 5 plants and details of use for fever for the first time from the area. In order to achieve the traditional use of plant species as in fever, it was found the people of the tarai region local as well as migrant has the tremendous knowledge regarding the traditional use of different plant species. Plants used for traditional medicine contain a wide range of substances that can be used to treat chronic as well as infectious diseases. A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance. It is considered that traditional medicine is cheaper and more effective than modern medicine. However, the people of this region use these medicines on the trial and error methods. Evidently, there are not many scientific studies that confirm the effectiveness for most of the plants collected for this study. The study calls for agronomic and bio-chemical investigations for sustainable use and scientific standardization of the recommended dose.

The important plant species are mainly being used as a traditional remedy for various type of fever which is beneficial, not only for the local people but the people for other area as a traditional remedy. For the new researcher, the information generated on these lines would provide a better insight about the present status of plant species which are traditionally used in different ailments in these areas. Besides, it would also generate baseline information for comparing future change in regional as well as global climate.

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References