

ETHNOBOTANICAL STUDY OF *AZADIRACHTA INDICA* A. JUSS. FROM OKARA CITY

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Abstract

This study reported 68 medicinal uses of the *Azadirachta indica* A. Juss. (Neem plant). In this survey, different parts of the plant were found to be used for the medicinal purposes i.e., leaves (71 %), flower (8.80 %), bark (11.80 %), fruit (4.40 %), branches (1.50 %) and the other different parts that are used together 2.90 %. The fresh and dry form of the all parts is used and the use of leaves is fresh leaves 66.70 %, dry leaves 25 % can use both dry and fresh 6.25 %. Neem is very important plant for the treatments of the skin diseases many other diseases are also treated like skin itchiness, healing of wound, bleeding of teeth, green stools etc. skin blemishes, scares, scalp dryness, heat rashes, bacterial and fungal skin infection etc. for hemorrhage and migraine, chicken pox. It is showed that the most frequently treated disease category with Neem is skin diseases.

Keywords: *Azadirachta indica* A. Juss., Dry sample, Fresh sample, Plant parts.

Introduction

Okara is the capital city of District Okara in the Punjab province of Pakistan. The name Okara is derived from “okaan” the name of type of tree. The city is located southwest of city Lahore and Faisalabad is 100 km by passing away Ravi river (Fig. 1). It is known for its agricultural based economy and cotton mills. The climate of Okara is usually warm and dry and the coldest month are December to February when temperature may drop to 37 °F) with moderate rainfall (Fig. 2; Fig. 3). The hottest months are May to July, when the temperature may reach 45 °C (113 °F). The annual rainfall in the city is approximately 509 millimeters (Fig. 4). And its geography is 30° 48'3" N 73°27'13" E. latitude is 105. Total of Okara is 199km² and the population is 1.8 million. Six localities of Okara were selected for the collection of ethno botanical data of neem (Azeem super market, Gamber,

Depalpore Chowk, 54/21, Usman town, Darul Ahsan town).

Materials and Methods

Data collection: Data was collected from the month of December 2019 to March, 2020. Total six survey trips were made during this time period. About thirty respondents were interviewed most of the were aged people between 40 to 70 years. Interviews were conducted by using the structured questionnaire composed of variety of questions regarding ethno botanical use of Neem. Data on age, gender, education, profession and status of respondents were also collected. The informants, most of them were males because females were less confident to give the interviews and most of them were physicians.



Fig.1. Illustration of location of study area.

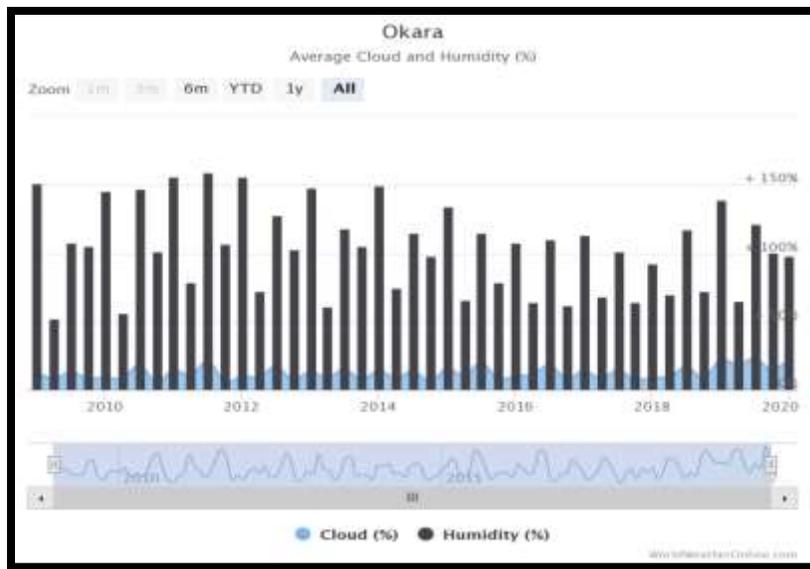


Fig. 2. Average cloud and humidity of Okara city.

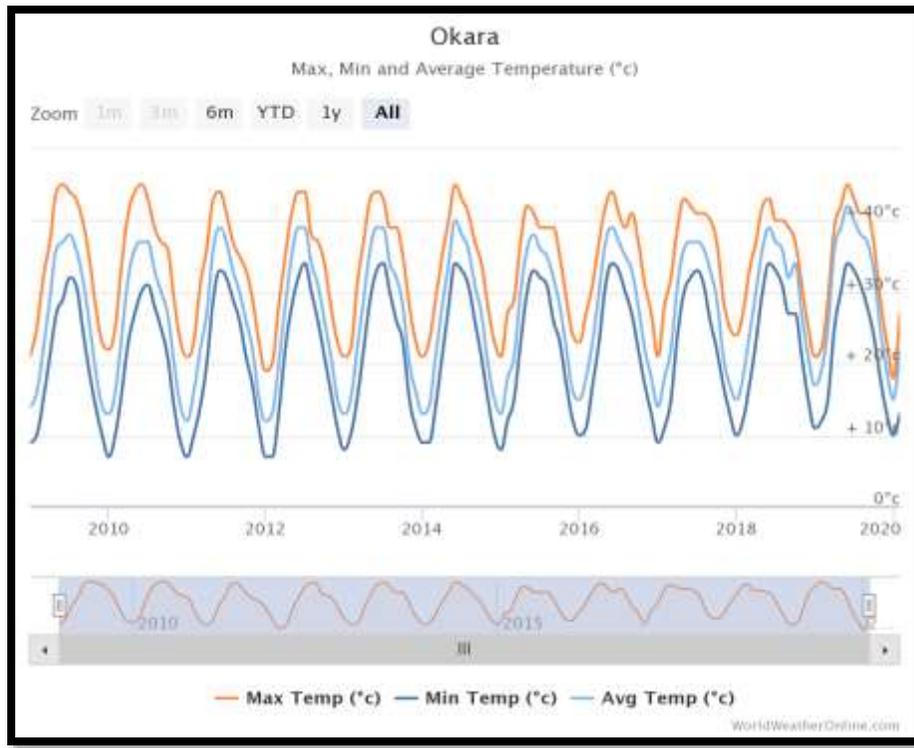


Fig. 3. Average temperature of Okara City

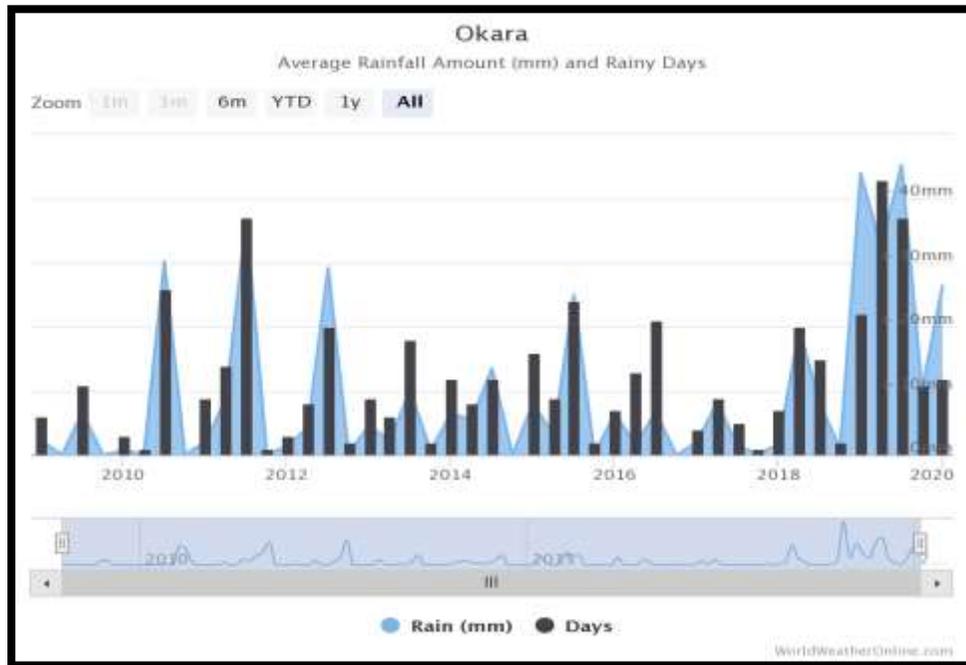


Fig. 4. Average rainfall in Okara City.

Results and Discussion

There are almost 68 diseases that are treated with different parts (leaves, bark, flower, fruit etc.) of the *Azadirachta indica* (Table 2). There are almost 14 methods of preparation (oil, decoction, steam, syrup, pills, tincture, ointment etc.) are used to make medicines by use different parts of the neem. Even though all the plant parts are significant in the treatment of different ailments, and the leaves are the most commonly utilizing plant part with 70.6 % application in traditional medicinal recipe, following by the flower 8.8 %, bark 11.8 %, fruit 4.4 %, branches 1.5 %, and use of combine parts 2.9 %. Traditional healers of study area also use other ingredients with the neem such as black pepper, honey, water, celery, bark of some other medicinal tree, brassica oil and desi ghee etc. oil is use as one of the major practice to prepare drug, after the oil the decoction is one of the other major practice to prepare drug in the traditional healing system because it is easy to make by with tea, water or soup. While making decoction, plant material is boiled in water until the volume of the water reduced to one fourth of its original volume, and the crude extract is obtained by grinding, squeezing or crushing the tree parts. The above table shows that the major use of the neem is to treat the skin infection or diseases. And it is very important to treat the different irritations of the eyes, skin, nose, soles and palms.

The utilization of medicinal plants to combat with various ailments is as old as human civilization. It has been reported that about 20 % of the whole plants found in this world are used for medicinal purposes to treat ailments in living beings (Khan *et al.* 2013). In the study area, several herbal traditional recipes have been used by indigenous communities especially by the local healers, having significant role

in the local health care system. They use the medicinal flora as the first aid in curing any ailment except in severe emergencies just like other parts of the country (Hilaly *et al.* 2003). Current study observed a significant decrease in the skill, faith and knowledge about traditional herbal medications due the recent introduction of allopathic medicines. Table 1 shows the demographic information of respondents while table 2 provides the local names, part used, medicinal description and the use value of Neem plant. A total of 30 respondents were interviewed. Medicinal knowledge was obtained from 30 while almost 10 of the informants were interviewed to locate the experts having the traditional knowledge in every location before conducting the ethno-medicinal survey. Male informants were mostly interviewed because in the area most of the female informants hesitate to give interview. Most of the data was gathered from the local healers (Hakims) and elder members of the community who possessed comparatively more accurate and sound traditional knowledge about the parts and recipes which improve the effectiveness of medicinal plants. That is why that because the traditional herbal recipes prepared by the elder community members (traditional practitioners and collectors) are more effective then prepared by the younger ones (Parveen *et al.* 2007; Muthu *et al.* 2006). This may be attributed to the recent trend towards modernization, affecting the level and accuracy of information which transfer from generation to generation. The decreasing rate of transfer of indigenous knowledge might be due to the fact the younger generation is not taking an interest in the learning and practicing the knowledge because the indigenous societies are exposing to modernization more and more day by day (Adnan *et al.* 2012).

Table 1: Illustration of informants' data.

Category	Total	Percentage
Gender		
Male	25	83.33 %
Female	5	16.67 %
Age group		
28- 40	13	43.34 %
> 40	17	56.67 %
Educational attainment		
Illiterate	7	23.34 %
Primary	6	20 %
Middle	9	30 %
>matric	8	26.67 %
Occupation		
House wives	3	10 %
Gardner	5	16.67 %
Local healers	10	33.33 %
Middle teacher	4	13.34 %
Labor	2	6.67 %
Elder	6	20 %

Table 2: Ethnobotanical data of *Azadirachta indica* collected from Okara city

Diseases that treated	Part that used	Preparation	Dried or fresh	Any other ingredients that used
Skin dryness	Leaves to extract oil	Oil	Fresh	No any other ingredient is used just leaves use to extract the oil
Skin itchinness	Leaves to extract oil		Fresh	
Pimples and skin blemishes	Leaves to extract oil		Fresh	
Healing of the wounds , and on scares	Leaves to extract oil		Fresh	
Scalp dryness and for curb dandruff	Leaves to extract oil		Fresh	
Heat rashes	Leaves to extract oil	Paste	Fresh	Message the affected area of body with neem oil and after 1 hour take bath with warm water and use the neem soap
Bacterial and fungal skin infections	Leaves		Fresh	Just leaves and very little amount of water is used to make paste
Warts	Leaves		Fresh	
Chicken pox	Leaves		Fresh	
Hemorrhage (lumbago)	Leaves		Fresh	Leaves and celery
Headache / migraine	Leaves	Paste	Dry	Dry leaves mix with water and make paste put on your head for 1 hour then shampoo it
Pustules	Leaves	Ointment	Fresh	Leaves of neem and shittim , bitter oil
Fever , malaria	leaves	Tea	Fresh	Leaves and use sugure just for taste
Clean colon	Leaves	Tea	Fresh	Leaves and use sugure just for taste
Improve vision	Leaves	Tea and let it cool	Fresh	Leaves and use sugure just for taste
Harmful bacteria in intestinal region	Leaves		Fresh	Leaves and use sugure just for taste
Increase the immunity	Leaves	Powder	Dry	Dry leaves

Bacteria in the intestinal region	Leaves		Dry	Dry leaves
Reduce the blood sugar level	Leaves		Dry	Dry leaves
Heal ulcer in the digestive tract	Leaves		Dry	Dry leaves
Plaque formation in the mouth	Leaves		Dry	Dry leaves
Blood disease(itch, scratch etc)	Leaves		Dry	Leaves , black pepper
Turgescence (blisters) of chest	Leaves	Powder	Dry	First wash the b blisters with neem water and then sprinkler the powder of neem leaves on the blisters
Stones of kidney and bladder	Leaves	Powder	Dry	Just leaves , Make salt of leaves of neem
Intestinal ulcer and infections	Leaves	Powder	Dry	Neem leaves burn and mix with brassica oil
Conjunctivitis	Leaves	Grind the leaves in the pistil mortar and extract the fluid / decoction	Fresh	Fresh leaves and small quantity of water for grinding
Night blindness	Leaves	Collyrium (khol) or drops	Both fresh and dry	Leaves and small amount of water
Diseases that treated	Part that used	Preparation	Dried or fresh	Any other ingredients that used
Pain of ear	Leaves	Boil in water and take steam	Fresh	Leaves (boil in water)
Eyes pain / blindness	Leaves	Leaves simply boiled and mix with lemon and save in bottle	Fresh	Leaves and lemon juice
Blisters (abscess) of ear	Leaves	Drops	Fresh	Leaves and honey

Deafness	Leaves	Drops	Fresh	Leaves of neem , borah armni (a herbal medicine) and honey
Different diseases of gums like bleedin and swelling of gums	Leaves	Leaves boil in water and gargle	Fresh	Just leaves
Itch of nose	Leaves	Lubricant	Fresh	Leaves and desi ghee
Headache	Leaves	Curry	Fresh	Leaves and desi ghee
Malaria	Leaves	Curry	Fresh	Leaves and desi ghee
Diseases that treated	Part that used	Preparation	Dried or fresh	Any other ingredients that used
Hemorrhage	Leaves	Fry in the desi ghee and make gravy	Fresh	Leaves ,desi ghee and use it with bread
Jaundice	Leaves	Semi liquid	Fresh	Leaves and honey
Vehemence thirst	Leaves	Syrup	Fresh	Leaves and black pepper
Cholera	Leaves	Dry the leaves at the fair and make powder	Dry	Leaves , black pepper , salt and use it with rose water
Diarrhea	Leaves	Pills	Dry or fresh both	Leaves black pepper ,rose water and use it after every 4 hours
Stomach ulcer	Leaves	Pills	Dry	Mix with water to make pills
Diarrhea	Leaves	Pills	Fresh	Fresh leaves and black pepper
Green stools	Leaves	Pills	Fresh	Leaves of neem , buckwheat ,Hannah ,
Diseases that treated	Part that used	Preparation	Dried or fresh	Any other ingredients that used
Pustules of children	Leaves	Ointment	Fresh	Leaves of neem and shittim
Mouth blisters	Leaves	Ointment	Fresh or dry both	Just leaves and can also mix with glycerin

Sowing / blisters of soles	Leaves	Mix in water	Fresh	Mix in water just wash the feet with this water
Turgescient eyes	Flowers	Collyrium	Dry	Flowers of neem , Kalmi shora (a herbal medicine) and collyrium
White of eyes	Flowers		Dry	Flowers of neem and kalmi shora (a herbal medicine)
Bleeding of teeth	Flowers	Flowers boil in water and gargle	Fresh	Flowers
Irritation of palm an soles	Flower	Flowers soak on water over night	Fresh	Flowers
Stomach worms	Flowers	Flowers fry in desi ghee/ make curry	Fresh	Flowers, desi ghee and black pepper
Teeth pain	Flower	Fresh flowers boiled in water extremely/syrup	Fresh	Flowers and water
Fever , Flue	Bark	Tincture	Dry	Dry bark of neem and rose water
Lose motion (diarrhea)	Bark		Dry	Dry bark of neem and rose water
Lumbago (hemorrhage)	Bark	Bark of neem boil in water (syrup)	Fresh	Bark of the neem and desi ghee
Diphtheria	Bark	Boil in water and take steam	Dry	Bark of neem and black night shade
Menstrual cramps	Bark	Boil in water with jiggery and make like syrup	Fresh	Bark and jaggery and also use with milk
Analgesic / fever	Bark	Old bark powder	Dry	Powder of old bark mix with nigella seed

Uncontrolled vomiting	Bark	Syrup	Fresh	Bark of neem and black pepper
Diarrhea	Bark	Paste	Fresh	Bark and yogurt
Hemorrhoid	Fruit	Paste	Fresh	Leaves and old (out dated) treacle
Warty	Fruit	Paste	Dry	Leaves, camphor (a herbal medicine)
Diseases that treated	Part that used	Preparation	Dried or fresh	Any other ingredients that used
Anorexia	Fruit	Directly	Fresh	Just fruit
Contagious disease of blisters	Branches and leaves both	Ointment	Fresh	Muster oil , braches of neem with leaves
Sweating at soles	Leaves and fruit	Drink/ syrup	Fresh	Mix this syrup in milk for drink
Bleeding of teeth and swelling of gums	Branches	Twig	Fresh	Soft branches of neem

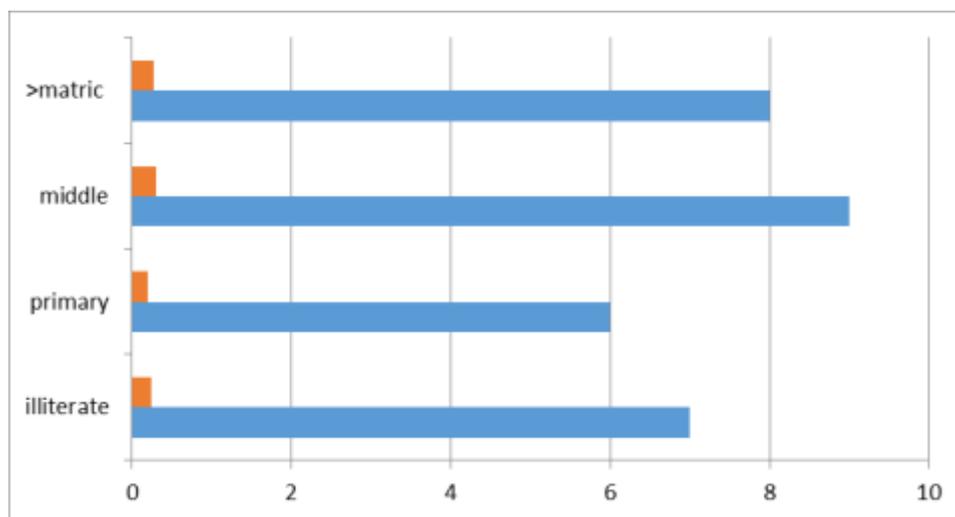


Fig. 5. Educational attainment of informants among different groups of people.

Findings of the current study suggest that the knowledge of traditional medication is in scattered form which is to be compiled and arranged in a systematic way so as to release the knowledge from the custody of local healers and older people and to share with the other communities through published literature. No doubt those local healers and the older people in the remote areas have sufficient knowledge about the uses of medicinal plants but still they are unaware of the importance of such traditional knowledge.

Special initiatives and awareness programs and projects should be designed to make fruitful strategies so as give awareness to the local communities about the importance of medicinal flora and also the importance of medicinal flora (Aziz *et al.*, 2016). In this survey most of the elder people (40+ Age) are 56.67 % and they gave the more accurate information as compared to young informants (43.34 %) (Table 1; Fig. 5).

Present study reported 68 medicinal uses of Neem plant. In my survey I found that different parts of Neem are used for the medicinal purposes for example the use of leaves is 71 %, flower 8.80 %, bark 11.80 %, fruit 4.40 %, branches 1.50 % and the other different parts that use together 2.90 %. The fresh and dry form of the all parts is used and the use of leaves is fresh leaves 66.70 %, dry leaves 25 % can use both dry and fresh 6.25 %. Many studies conducted in different ethnic communities have reported frequently the use of leaves in traditional therapies and the widely accepted role of leaves in traditional herbal medicines may be due to large quantity of biologically active components present inside them (Mehmood *et al.*, 2013). Apart from leaves, almost all the other parts of medicinal plants such as flower, bark, stem, seed fruit

are also used but the collection of that specific part depends on the requirement of the user. The utilization of leaves in traditional medication may also be due to their easy availability, processing methods and minimum conservational issues (Ticktin, 2004). Those parts of the plants which are frequently used may suggest and highlight the fact that these parts may have strong medicinal values and need to further evaluate and analyze them biochemical screening and pharmaceutical evaluation so as to cross check the local and indigenous information to cross check the local and indigenous information. The study indicated the use of several parts of medicinal plant Neem against specific diseases or category of diseases. Reported medicinal plant was used against 68 different kinds of diseases including some serious ailments like skin problems, like skin itchiness, healing of wound, skin blemishes, scars, scalp dryness, heat rashes, bacterial and fungal skin infection etc. for hemorrhage and migraine, chicken pox, bleeding of teeth, green stools etc. In study it is showed that the most frequently treated disease category with Neem is skin diseases.

References

- Adnan, M., S. Begum, A. Latif, A.M. Tareen and L.J. Lee. 2012. Medicinal plants and their uses in selected temperate zones of Pakistani Hindukush- Himalaya. *J Med Plants Res.*, 6: 4113–27.
- Aziz, M.A., M. Adnan, A.H. Khan, A.U. Rehman, R. Jan and J. Khan. 2016. Ethno-medicinal survey of important plants practiced by indigenous community at Ladha subdivision,

- South Waziristan agency, Pakistan. *J. Ethnobiol. Ethnomed.*, 12(1): 53.
- Khan, S.M., S. Page, H. Ahmad, H. Shaheen, Z. Ullah, M. Ahmad and D.M. Harper. 2013. Medicinal flora and ethnoecological knowledge in the Naran Valley, Western Himalaya, Pakistan. *J Ethnobiol Ethnomed.*, 9:4.
- Muthu, C., M. Ayyanar, N. Raja and S. Ignacimuthu. 2006. Medicinal plants used by traditional healers in Kancheepuram District of Tamil Nadu, India. *J Ethnobiol Ethnomed.*, 2:43.
- Parveen, P., B. Upadhyaya, R. Shikha and K. Ashwani. 2007. Traditional uses of medicinal plants among the rural communities of Churu district in the Thar Desert, India. *J Ethnopharmacol.*, 113(3):387–99.
- Ticktin, T. 2004. The ecological implications of harvesting non-timber forest products. *J Appl Ecol.*, 41:11–21.