



Ethnomedicinal recipes of wild fruits of Sargodha District, Punjab, Pakistan

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Abstract

The present study was conducted in the Sargodha district, Punjab, to underline indigenous knowledge of wild edible fruits as for therapeutic use by the local inhabitants. Folklore traditions with respect to curative flora were gathered through meetings and surveys from key informants including local residents, shepherds, herders, ranchers, traditional healers and herbalists. Rural vicinities were engaged to investigate reliable clients of wild edible fruits. Such studies not just assume a significant role in saving the native medica-ethnobotanical information yet in addition help to update the social status and economic values of the indigenous communities that consequently preserve the global heritage. 27 fruit species belonging to 15 families were recorded in the territory. All the plants were extremely compelling against various diseases and native to the area. The data about their botanical names, local names, families, part used, method of use and used for, all were recorded. The fruits and other plant samples of the investigated plants were collected, identified, preserved and deposited in the Herbarium of University of Sargodha (SARGU) for future references.

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Introduction

The utilization of plants as a significant wellspring of medications for treatment of different illnesses started from prehistoric time (Malik, 2001). The ethnic races and innate individuals all through the world have built up their own way of life and sustenances and therapeutic practices. The traditional knowledge about the link between local inhabitants and medicinal plant wealth for the treatments of various disorders is called Ethnomedicine. Health and culture promotion without scientific knowledge is the key aspect of ethnomedicine. It is an unstated knowledge transmitted through socio-cultural and household contexts. The basic medicinal necessity of an indigenous community is accomplished through regional curative flora. Indigenous reviews uncovered that various plants are utilized to treat a malady or a few infections in the meantime (Arshad & Rao, 2001). The nutritional, edibility and therapeutic properties of wild edible fruits are data deficit. The conventional learning about the utilization of wild edible plants is confronting dangers of vanishing in modern civilizations. An incredible reliance has developed to assess wholesome and therapeutic values of wild fruits rather than cultivated commercial fruits as the last ones are expensive and unaffordable for the rustic needy individuals (Nazarudeen, 2010). Documentation of ethnomedicinal recipes of wild vegetation by the rustic communities is of most extreme essential to secure the indigenous data (Panda, 2010). Ethnomedicinally important flora has incredible perceivability in indigenous and rural communities. But at present the knowledge about ethnomedicinal recipes is being declined day by day by the introduction of exotic species and modern pharmacology. Along these lines, indigenous learning must be connected in current pharmacology to avoid side effects of the drugs (Rasingam and Rehel, 2009).

The untamed or un-hybridized plants which develop naturally without human mediation existed in an area for quite a long time are named as wild plants. The present day fruits appeared by the domestication of wild fruits. Important data on the choice and utility of

wild species of fruits were passed on by the cavemen from age to age. That data turned into the reason for present day agriculture and horticulture. The essential nutritional elements like Ca, Cu, Fe, Mn etc. are in much higher concentration in wild edible fruits than the others (Hegazy *et al.*, 2013). Forests are the natural habitat of wild edible plants providing the baseline of indigenous knowledge and socio-cultural benefits. Wild plants are potential source of hereditary characters for the development of new crop varieties. Wild fruits are an exquisite source of micronutrients and macronutrients including proteins, carbohydrates, minerals, vitamins and dietary fibers. The healthy benefit of wild natural products is superior to artificial ones. So cause immunity to various diseases and provide essential health and growth factors. Wild plants are the reservoirs of organic and inorganic bio-molecules. Many local inhabitants and indigenous communities practice medicinal plants to fix various health dangers even today (Naidu *et al.*, 2013). Rural people in developing countries harvest fruits, leafy vegetables, roots, tubers from the wild as food supplements, cultural use, taste, or to defeat nourishment deficiency. A portion of these plants are gathered for home consumption or for sale as well.

Pakistan occupies the land of a diverse flora and ecological zones acting as the storehouse of plants which are used by the local people and tribal communities as a source of medicines in the remote areas. The diversity of medicinal plants is fascinating in Pakistan (Nasreen and Khan, 2001). Sargodha, the district of Central Punjab has most of its population in rural areas. It is facing many challenging factors such as urbanization, overpopulation, limited opportunities for livelihood, food insecurity and unaffordable rise in the prices of food items. It has fertile land and most of its rural population is concerned to farming and agriculture. However, less attention has been paid by the government for poor farmers and ranchers. Rustic people in antient villages still rely upon ethnomedicinal recipes to combat various illnesses. For this, Hakeems are considered more reliable persons which are actually

concerned with the supply of vegetative and floral parts of wild edible plants. Despite modern agricultural techniques and domestication of crop and fruit plants, wild edible plants are commonly speckled in the district. So, they are utilized as the cheap source of nutraceutical diet to overcome malnutrition, food shortage and medicinal imbalance. The main objective of our study was to document how the inhabitants of Sargodha district, Pakistan, who live as farmers, agriculturists, herdsmen, peasants, ranchers, traditional healers and herbalists, have employed the wild fruit plants as the source of medicines to treat various health challenges.

Materials and methods

Study Area

Sargodha is located in the Central Punjab, Pakistan. Geographically it is located in longitude 72°-38' to 72°-43' and latitude of 32°-3' and 32°-7'. It occupies very fertile agricultural land. It is famous with the title "The California of Pakistan" due to vast production of Kinnow - the citrus fruit. It is 11th largest city of Pakistan.

It is one of the fast growing cities in Pakistan. Sargodha has largest and historic PAF Base due to which it has earned the title "The City of Eagles". The language which is most widely spoken in the whole district is Punjabi. It is well connected by road with other major cities like Lahore, Faisalabad, Jhang, Rawalpindi, Gujrat and Hafizabad. It lies 30 miles away from Lahore - Islamabad Motorway, M-2 (Fig.

1). Its area is 5,854km². The climate of the district ranges from extreme heat (50°C) in summers to 0°C in winters. There are mainly flat plains in the whole district yet few small hills also occur on Faisalabad road. The second largest river of Pakistan, The River Chenab flows on eastern side and the River Jhelum lies on the western and northern sides of the city. Despite of modern agricultural techniques and domesticated fruit and crop plants in Sargodha, wild fruits are abundant and commonly eaten by the local people. Some of the wild fruits are sold in local markets and festivals or preserved to be used during dry periods. The wild plants were mostly seen in Graveyards, Shrines, along the sides of rivers, lakes, roads, railway lines and uncultivated lands.

Ancient villages

Ancient villages such as Ajnala, Mari, Tanguwali, Kot Bhai Khan, Nehang, Matela, Baga Baloachan, Nabi Shah Bala, Bhabra, Lak Mor, Kalra, Bhagtanwala, Lakseen, Dharema, Shaheen Abad, Behk Maiken, Maroolian Wala, Kolowal, Ludywala, Jhawrian, Bucha Kalan, Doda, Midh Ranjha, Manky Wala, Ootian, Mitha Lak, Sardar Pur Noon, Shah Nikdur, Dhall, Jhugian, Miani, Liliani, Jalpana, Jalal Pur Nangiana, Luqman, Hathi Vind, Khachar Pur, Mela, Kot Umrana, Bhabhrani, Sultan Pur, Farooka, Chhani Rehan, Vijh, Bakhar Bar, Salum, Chubba, Phularwan, Basra and Ratta Pur Rehan were visited. Syed, Awan, Lak, Baloach, Maiken, Ranjha, Kalyar, Gondal, Tiwana, Jara, Nathoka, Majoka, Sial are some of the major casts of native inhabitants in the area.



Fig. 1. Map of the Study Area.

Method

The information for the use of wild edible fruits as source of traditional medicine was collected from January 2014 to August 2016 in 50 different villages of Sargodha district. Ethno-medicinal investigations were carried out following well-versed semi-structured interviews and questionnaire technique. Information of the ethno-medicinal use, local name, part used, mode of administration and locally used recipes were documented (Martin, 1995).

All collected plant samples were pressed, dried and mounted on herbarium sheets. Scientific names were confirmed with the help of "Flora of Pakistan" (Nasir and Ali, 1970-2002). Preserved specimens were deposited in the Herbarium of the University of Sargodha for future reference. A total of 178 key informants, traditional healers, ethnic users, housewives, schoolboys and children (120 men and 58 women) ranging from 15 to 80 years old of the study area were interviewed.

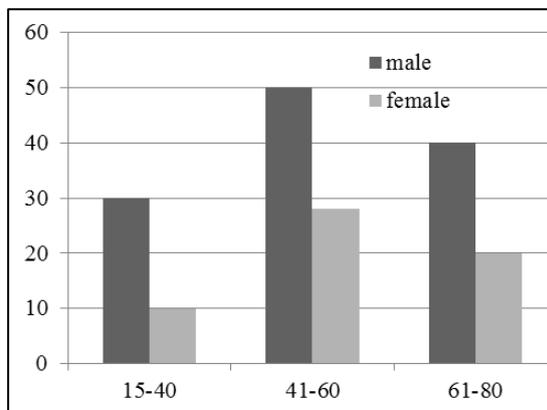


Fig. 2. Gender data of participants divided into three age (years) groups.

Results and discussion

The inhabitants of the subject area utilize wild edible fruits as alternate source of food and possess a good knowledge about their ethnomedicinal uses. The studied species were found most effectual with respect to medicinal efficacy. The fruits of all the species were found edible with slight difference in mode of utilization. General account including local recipes and medicinal values of all the studied plants were recorded (Table 1).

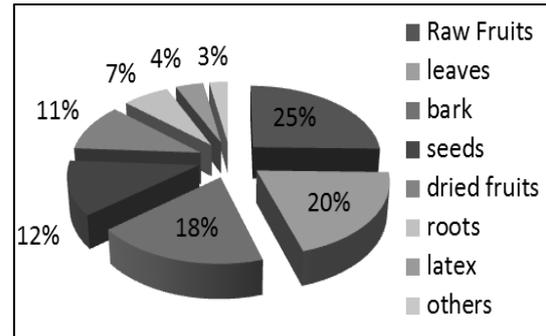


Fig. 3. Part used of wild edible fruit plant.

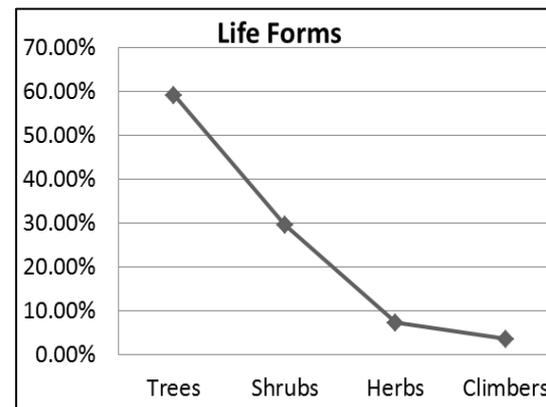


Fig. 4. Habit of wild edible fruit plants.

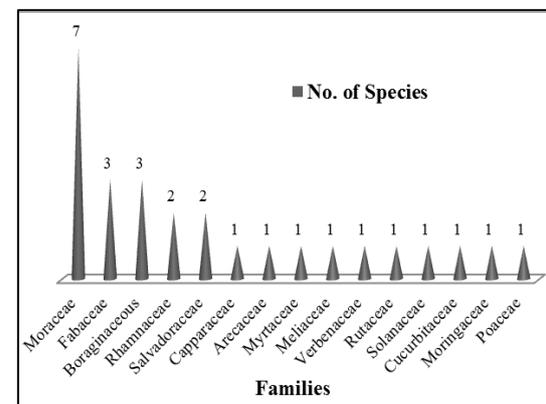


Fig. 2. Families with no. of Species.

The knowledge in regards to medicinal use was generally found in individuals with low degree of education and among the age bunch between 40-60 years (Fig. 2). This is on the grounds that such individuals are for the most part associated with cultivating and are illiterate as well.

They likewise stay away from the utilization of pharmaceutical medications and depend upon conventional and ethnomedicinal plans.

Table 1. Medicinal value of local recipes prepared from wild edible fruit plants in Sargodha District.

Botanical Name/ Voucher Number	Local Name	Family	Part(s) used	Local Recipes (mode of utilization)	Used For/Medicinal Value
<i>Avena sativa</i> L./ ASIF-28	Jangli Jai/Jaudri	Poaceae	Fruits (grains)	(i) Fruits are dried and grounded in the form of flour. (ii) A paste from ground seeds.	(i) Lowers the cholesterol level in blood, stimulant, laxative and diuretic. (ii) Internal infections.
<i>Azadirachta indica</i> A. Juss./ASIF-15	Neem	Meliaceae	Whole plant	(i) Ripened fruits are eaten. (ii) Decoction of bark. (iii) Sharbat from leaves. (iv) Dried flowers are taken orally with water. (v) Hard powdered seeds.	(i) Diabetes, mouth blister and skin diseases. (ii) Insecticidal and liver tonic. (iii) Refrigerant, blood purifier and anti-diabetic. (iv) Intestinal burns, ulcers and dyspepsia. (v) Leprosy, diabetes and ulcer.
<i>Bauhinia variegata</i> L./ ASIF-29	Kachnar	Fabaceae	Flower buds/ roots/ bark	(i) Flower buds are pickled and used as vegetables. (ii) Decoction of bark. (iii) Decoction of root. (iv) Floral buds are dried and ground.	(i) Blood purifier and anthelmintic. (ii) Ulcer, inflammation, skin diseases, leprosy and diarrhea. (iii) Dyspepsia and obesity. (iv) Worms and dysentery.
<i>Broussonetia papyrifera</i> (L.) Vent./ASIF-30	Jangli Toot	Moraceae	Whole plant	(i) Fruits are eaten raw. (ii) Juice from leaves. (iii) Poultice from leaves. (iv) Decoction of bark. (v) Latex. (vi) Infusion from leaves.	(i) stomachic, laxative and tonic. (ii) Laxative and diaphoretic. (iii) Insect bites and skin diseases. (iv) Abdominal distention. (v) Insect bite and bee sting. (vi) Abdominal pain.
<i>Capparis decidua</i> (Forssk.) Edgew./ASIF-01	Dela/ Karya	Capparaceae	Whole plant	(i) Fruits are pickled to make Achaar. (ii) Fruits are eaten raw. (iii) Decoction of bark. (iv) Poultice from leaves. (v) Leaves are chewed. (vi) Suspension from shoot and sheep's milk.	(i) A tasteful recipes used with bread (paratha/roti). (ii) Bilioussness, cardiac disorders. (iii) Diaphoretic, laxative rheumatism and remittent fevers. (iv) Swellings and boils. (v) Toothache. (vi) Pain of gingivitis and pyorrhea.
<i>Cassia fistula</i> L./ ASIF-31	Amaltas/ Girdh Nalli	Fabaceae	Fruits/ leaves/ Seeds	(i) Dried pods/seeds are powdered to make Phakki. (ii) Infusion of fruit is given orally for almost 20 days, 3 times per day. (iii) Tender leaves are rubbed on dry skin.	(i) Stomachic and is given to children under the age of one year for alimentary tract disorders. (ii) Jaundice. (iii) Very emollient and soften the skin.
<i>Citrus limon</i> (Linn.) Burn. f./ ASIF-32	Lemon/ Nimbu	Rutaceae	Fruit	(i) Fruits are pickled. (ii) Shikanjbeen by mixing lemon juice with sugar, salt, water and ice. (iii) Fresh lemon juice. (iv) Fruit peel is eaten.	(i) Nutritive, tasty and flavoring. (ii) Refrigerant, thirst, heat stroke, diarrhea and dysentery. (iii) Flavoring the drinks, salad and liquors. (iv) Carminative and stomachic.
<i>Cordia dichotoma</i> G. Forst./ASIF-23	Lasoor	Boraginaceae	Whole Plant	(i) Fruits are eaten raw. (ii) Pounded green fruits are mixed with salt and pepper to make "Chatni". (iii) Mucilage. (iv) Leaves extract. (v) Decoction of bark. (vi) Pounded roots mixed with water and misri.	(i) Masculine sexual weakness, dropsy, diarrhea, cold, acidity, hepatitis, cholera and asthma. (ii) A recipes used with bread. (iii) disorders of uterus, urethra, chest and cough complaints. (iv) Headache and ulcer. (v) Fever and dyspepsia. (vi) Fever and dyspepsia.
<i>Cordia myxa</i> L./ASIF-08	Lasoori	Boraginaceae	Whole Plant	(i) Fresh fruits are eaten raw. (ii) mature but unripe fruits are pickled.	(i) Male sexual weakness, infections of urinary tract, stomachache, coughs, diseases of chest, urethra and uterus. (ii) A tasteful and tonic recipe used with bread (roti/paratha).
<i>Cucumis melo</i> L./ASIF-11	Chibherr	Cucurbitaceae	Fruits	(i) Fresh fruits are eaten. (ii) Seeds are edible. (iii) Rubbing pieces of fruits on skin. (iv) Emulsion from seeds. (v) fruit is cut into pieces and dried to cook with other vegetables.	(i) Stomachic, dehydration, constipation and urinary tract infections. (ii) Nutritive and oily. (iii) Moisturizing and cooling for skin. (iv) acts as vermifuge. (v) acts as condiment.
<i>Ehretia acuminata</i> R. Br./ASIF-07	Peelak/ Koda	Boraginaceae	Fruit/ bark/ seeds	(i) fruits are edible. (ii) Chewing of bark. (iii) A paste from ground seeds.	(i) nutritional and used by local poor people and herdsmen. (ii) Mouth ulcer, gums and teeth disorders. (iii) Jaundice.
<i>Ficus benghalensis</i> L./ ASIF-33	Bohr	Moraceae	Whole plant	(i) Fruits are edible. (ii) Latex is applied for a week inside the mouth. (iii) Infusion from bark. (iv) Leaves taken orally.	(i) Nutritive and delicious. (ii) Mouth wounds/bleeding gums. (iii) Diarrhea, leucorrhoea, dysentery and diabetes. (iv) Skin allergy/leprosy and ulcer.
<i>Ficus palmata</i> Forssk./ASIF-10	Jangli Injeer	Moraceae	Fruits/ seeds/ Latex	(i) Fruits are eaten raw. (ii) Seeds are edible. (iii) Latex. (iv) A syrup from fruit pulp and other parts.	(i) Nutritive and delicious. A diet having mild laxative effect. (ii) Sexual weaknesses. (iii) Stings and insect bite. (iv) Constipation.
<i>Ficus racemosa</i> L./ASIF-18	Gulhar	Moraceae	Fruits/ Seeds/ Bark	(i) Fruits are eaten raw. (ii) Seeds are taken orally. (iii) Extract from fruits. (iv) Decoction from bark.	(i) Nutritive and powerful agents for sexual weaknesses. (ii) Cooling and aphrodisiac. (iii) Diabetes.

Botanical Name/ Voucher Number	Local Name	Family	Part(s) used	Local Recipes (mode of utilization)	Used For/Medicinal Value
<i>Ficus religiosa</i> L./ASIF-26	Peepal	Moraceae	Fruits/ Seeds/ Bark	(v) Paste from ground seeds and honey. (i) Fruits are edible. (ii) Seeds are also edible. (iii) Juice. (iv) Ground seeds. (v) Decoction of bark.	(iv) Diarrhea. (v) Diabetes. (i) Digestive and laxative. (ii) Stimulating agents for CNS. (iii) Gums and toothache. (iv) Sterilize women in menses. (v) Jaundice, snake bite, scabies.
<i>Lantana camara</i> L./ASIF-13	Bhangi Booti/ Panj Phulli	Verbenaceae	Whole plant	(i) Fruits are edible. (ii) Sharbat (an aqueous extract) from flowers. (iii) Sharbat from leaves. (iv) Decoction of roots.	(i) Carminative, anti-inflammatory (ii) Analgesics and diaphoretic (iii) Colds, cough, flu, fevers and dysentery (iv) Gonorrhoea.
<i>Moringa oleifera</i> Lam./ASIF-34	Suhanjna	Moringaceae	Fruits/ Seeds/ Leaves	(i) Fruits as vegetable. (ii) Pods are pounded to make chatni. (iii) Phakki from seeds. (iv) Decoction of bark. (v) Leaves are orally taken. (vi) Fruits are pickled.	(i) Diseases of spleen and liver. (ii) As condiments. (iii) Purgative and antipyretic. (iv) Asthma and coughing. (v) Night blindness and scurvy. (vi) As condiments and flavoring the foods anti-diabetic.
<i>Morus alba</i> L./ASIF-02	Toot	Moraceae	Whole plant	(i) Fruits are eaten raw. (ii) Decoction from leaves. (iii) Chewing of leaves. (iv) Green young leaves are applied on dry skin. (v) Decoction of bark. (vi) Root extract.	(i) Laxative, cooling, sore throat and allay fever and thirst. (ii) inflammatory throat. (iii) Diaphoretic. (iv) Very emollient. (v) Vermifuge and purgative. (vi) Astringent and antihelmintic.
<i>Morus nigra</i> L./ASIF-17	Shahtoot	Moraceae	Fruits/ leaves/	(i) Fruits are eaten raw. (ii) decoction from leaves. (iii) Chewing of leaves. (iv) Leaves applied on skin.	(i) Nutritive, expectorant, cooling, chest and throat infection. (ii) Hyperglycemia/throat infection (iv) Emollient.
<i>Phoenix sylvestris</i> (L.) Roxb./ASIF-12	Khajji/ Doka/ Khajoor	Areaceae	Fruits, spines (leaflet)	(i) Ripened fruits are eaten. (ii) Dried fruits. (iii) Stained decoction from pounded spines.	(i) Overcome food insecurity, very energetic and astringent. (ii) For future use. (iii) General body pain.
<i>Prosopis cineraria</i> (L.) Druce/ ASIF-35	Jand	Fabaceae	Whole plant	(i) Vegetables. (ii) Pounded flowers are mixed with sugar or gur. (iii) Smoke of leaves. (iv) Decoction of bark.	(i) Astringent and pectoral having antibacterial effects. (ii) Miscarriage in pregnant women. (iii) Eye trouble. (iv) Rheumatism and diabetes.
<i>Salvadora oleoides</i> Decne./ASIF-09	Van	Salvadoraceae	Whole plant	(i) Fruits are eaten raw. (ii) Seeds yield green oil. (iii) Crude plant samples are gathered.	(i) Kidney pain and pneumonia. (ii) A great medicinal oil. (iii) Phytotoxic, insecticidal, antifungal and antibacterial.
<i>Salvadora persica</i> L./ ASIF-36	Pilu	Salvadoraceae	Whole plant	(i) Fresh fruits are eaten raw (ii) crude plant samples are gathered (iii) suspension from leaves.	(i) Pain and pneumonia fever (ii) Phytotoxic, insecticidal, antifungal and antibacterial. (iii) Heat stroke and chronic fever.
<i>Solanum nigrum</i> L./ASIF-27	Mako/ Kach Mach	Solanaceae	Fruits/ leaves	(i) Fruits are eaten raw. (ii) Sharbat of leaves. (iii) Leaves and young twigs are cooked as vegetables. (iv) A green tea from shadow dried leaves.	(i) Cooling and blood purifying agents and treat diarrhea. (ii) Bleeding piles, dysentery and chronic enlargement of liver. (iii) Eaten with bread as salan. (iv) Asthma.
<i>Syzygium cumini</i> L. Skeels/ASIF-21	Jaman	Myrtaceae	Fruits/ leaves/ bark	(i) Fruits are eaten raw. (ii) A syrup from extracted juice of ripened fruits. (iii) Squash from fruits. (iv) Chewing of leaves. (v) Decoction of bark.	(i) Diarrhea and urethorrhoea. (ii) Diarrhea and indigestion. (iii) Cooling recipes. (iv) Vomiting, dyspepsia and dysentery. (v) Leucorrhoea, fever and cough.
<i>Ziziphus mauritiana</i> Lam./ASIF-04	Beri	Rhamnaceae	Whole Plant	(i) Fresh fruits. (ii) Dried fruits. (iii) Seed liniment with oil. (iv) Leaves with milk. (v) Lotion from leaves. (vi) Paste from leaves. (vii) Suspension from bark. (viii) Pounded roots.	(i) Purify blood and pectoral. (ii) For future use. (iii) rheumatism . (iv) gonorrhoea. (v) conjunctivitis. (vi) wound dressing. (vii) dysentery and diarrhea. (viii) indigestion and menstruation
<i>Ziziphus numularia</i> (Burm.f.) Wight & Arn./ASIF-19	Malha Beri	Rhamnaceae	Whole Plant	(i) Fresh fruits (ii) Arq/Joshanda by fruits. (iii) Pulp is removed from fresh fruits and endocarp is obtained with kernels. (iv) Root/bark Decoction. (v) Powdered roots.	(i) Styptic, mucilaginous, laxative, digestive, pectoral and anodyne. (ii) Chest complaints. (iii) Abdominal pain in pregnancy. (iv) Obesity, diarrhea, biliousness, headache, fever and cooling effect. (v) Ulcers and wounds.

A total of 27 plant species of 20 genera and 15 families were recorded as wild edible fruits in the study area (Table 1). The mode of utilization was varying with the type of plant being utilized. Some of them were eaten raw and some others needed simple

or complex preparations. Concerning the part utilized; 25% were raw fruits, 20% leaves, 18% bark, 12% seeds, 11% dried fruits, 7% roots, 4% latex and 3% other edible parts (Fig. 3). A sum of 15 families were recorded from which Moraceae family positioned

first with respect to number of specie (7), Fabaceae (3), Boraginaceae (3), Rhamnaceae (2), Salvadoraceae (2) and Capparaceae, Arecaceae, Myrtaceae, Meliaceae, Verbenaceae, Rutaceae, Solanaceae, Cucurbitaceae, Moringaceae and Poaceae with 1 species each (Fig. 5). Most highly use report of plant species were belonging to family Moraceae because of its flavorful fruits, more extensive occurrence, spineless canopy and effectively accessible plants to the general population. Regarding the propensity for the all out 27 wild edible fruit plants in the study area, 16 were trees, 8 shrubs, 2 herbs and 1 climber (Fig. 4). This was on the grounds that trees had more fitness and adaptation to the habitat but shrubs and herbs were easily debarked and browsed by herds.

As for the preparation of local recipes, blending of pounded leaves in water was most effectively and exceedingly adopted method followed by decoction of barks, leaves and roots. Local individuals accept that syrup or decoction preparation from natural plant materials is highly significant and it is general perception that boiling process upgrades the activity of bioactive compounds (Al-Adhroey *et al.*, 2010). Similarly practice of gargle, poultice, liniment and infusion was additionally observed during the study. Fresh juice, suspension, squash and syrup preparation from edible parts of the plants was also carried out in the study area so as to their tonic and restorative properties and furthermore to overcome summer hotness.

Avena sativa was a common herb belonging to family Poaceae. Its grains were edible and ethnomedicinally utilized for various illnesses (Table 1). Ripened fruits of *Azadirachta indica* were edible with the local name "Nimoli". Fruits were eaten raw having good results against asthma, diabetes and skin infection. Decoction of bark was used to cure fever. Chewing stick (Miswak) from the branches was used against toothache (Table 1). *Bauhinia variegata* was an important medicinal tree occurring in the wild as well as domesticated in the district. Its floral buds were commonly used in pickles and vegetables (Table 1). *Broussonetia papyrifera* was commonly known as

Jangli Toot in Sargodha. Its fruits were edible. Whole plant was important to prepare different local recipes for therapeutic purposes (Table 1). *Capparis decidua* was a spinous and densely branched medicinal bush. Its fruits were widely used in pickles (Satyanarayana *et al.*, 2008). *Cassia fistula* an amazing plant of therapeutic significance was also investigated during the study. Its dried pods/seeds were powdered to make Phakki which was given to children under the age of one year for alimentary tract disorders (Table 1). *Citrus limon*, a flavouring fruit species was commonly utilized in the area. Its most specific use was in making a refregerent recipe (Shikanjbeen) in summer. Its fruits were also pickeld (Table 1).

Cordia dichotoma was a wild tree species in the area. Its fruits were eaten raw. Mature but unripe fruits were used as vegetable (chatni). Its fruits were found to be coolant, astringent, expectorant, purgative, emollient, analgesic and anti-inflammatory (Table 1). The findings are strenthen by those of Kuppast & Nayak (2006). Fruits of *Cordia myxa* were widely used to make pickle with good taste and proved to be beneficial against gonorrhoea, thirst and scalding of urine (Table 1). Fruits along with mucilage were found to be edible. They showed good results against liver fibrosis and diseases of spleen and lungs. The results are comparable to those of Afzal *et al.*, (2007). Ethnomedicinally, *Cucumis melo* was important as cooling and moisturizing agent for skin. *C. melo* was a mean of rural diet (Sultan Asyaz *et al.*, 2010). Phytochemical constituents in the plant showed good results against cardiovascular and inflammatory disorders (Dhiman *et al.*, 2012). Fruits of the *Ehretia acuminata* were eaten raw by the local people especially the children. These findings are strenghthen by the results obtained by Bandyopadhyay & Mukherjee, (2009).

Ficus benghalensis was a huge perennial tree. It was domesticated for shade in the area. Whole plant was important from medicinal point of view (Table 1). Latex from *Ficus palmata* was proved to be exceptionally good remedy against pimples, prickles and warts when applied externally to the skin. Leaves

also had medicinal applications to cure stomach disorders. Constipation was treated by eating the fruits of *F. palmata*. *Ficus racemosa* Fruits were highly edible and nutritional. They were used against gynecological disorders. Decoction of leaves was used against fever, cough and diabetes (Table 1). *Ficus religiosa* fruits were edible but rarely consumed for being tasteless. Herdsmen and forest dwellers in the area usually consume its fruits during food shortage and hunger. Decoction of leaves was used against diabetes and sexual weakness (Table 1). Leaf extracts from *Lantana camara* have been used by various folk medicines. Lantana fruits are edible when ripe. However, ingestion of unripe berries does not cause any significant toxicity in humans (Carstairs *et al.*, 2010).

Moringa oleifera, a great medicinal tree was commonly utilized in the form of pickles and vegetables with a general perception in study area to be effective against almost 70 diseases. Fruits of *Morus alba* were highly edible, digestive and medicinal (Table 1). Whole plant was crucial in protecting and preventing human organisms against civilization diseases. That is the reason due to which it was an important ethnomedicinal tree in study area. These results are comparable to those of Srivastava *et al.*, (2003). Ripened fruits of *Morus nigra* were eagerly eaten by people of all ages. They were delicious and therapeutic due to which *M. nigra* was occupying the properties of an excellent medicinal plant in the area. Ripened fruits (dates/doka) from *Phoenix sylvestris* are source of mineral like calcium and iron, so exhibit excellent results in strengthening the body and bones and in maintaining blood composition (Pederson, 2009). *Prosopis cineraria* was an incredible source of ethnomedicinal recipes (Table 1). *Salvadora oleoides* has gained sacred status among the religious affectionals. It was well growing in the graveyards and around the oldest shrines of saints (sufis/murshad). Local people avoid its cutting. Its sticks were used to make toothbrushes (Miswak) for teeth damage (Table 1). These investigations are supported by the results found by Khan (2009). *Salvadora persica* is another wild member of family

Salvadoraceae. Its fruits (Pilu) were consumed by the rural inhabitants. It was also famous for its nutraceutical means. *Solanum nigrum* fruits were black to orange-red or dull purple berries. They were edible to humans. These findings are also supported by the results obtained by Abbasi *et al.*, (2013). It was a medicinal fruit species (Table 1). Young leaves were pounded or cooked in water as vegetable (Abbasi *et al.*, 2013). Painful eyes were treated by topical application of its leaf extract. Shadow dried leaves were used in green tea to take orally against asthma.

Syzygium cumini was possessing great nutraceutical fruits which were eaten raw by rural people and also sold in rural and urban markets. Fruits were edible. These findings are strengthened by the results obtained by Bandyopadhyay & Mukherjee (2009). The cooling and astringent squash prepared from the fruits showed anti-inflammatory and anti-diabetic actions (Table 1). The results were comparable to those of Shweta *et al.*, (2012). *Ziziphus mauritiana* fruits were found to be edible and demulcent. The results in present investigation are supported by the results presented earlier by Rashid & Marwat, (2006). Fruits were mucilaginous, pectoral and astringent. These findings are also supported by those expressed by Arshad & Rao (2001). The fruits of *Z. numularia* were found edible to humans (Abbasi *et al.*, 2013). They were eaten raw or dried for future use. They are astringent and medicinally important (Table 1). Ripened fruits were eaten with digestive and tonic features (Rashid & Marwat, 2006). Leaf paste was used to cure ulcerous wounds in animals. The results are also supported by the results found by Khan (2009).

Recommendations

It is recommended that there must be link between ethnomedicinal studies and present day science for the sustained usage of these wild sources of medication. It is likewise requirement for the manageable utilization of wild verdure in the area. It is furthermore endorsed that product development should be conducted to come up with healthy and nutritious items from the fruits and other parts of the investigated plants.

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References

Abbasi AM, Khan MA, Zafar M. 2013. Ethno-medicinal assessment of some selected wild edible fruits and vegetables of Lesser Himalayas, Pakistan. *Pakistan Journal of Botany* **45**, 215-222.

Afzal M, Obuekwe C, Khan AR, Barakat H. 2007. Antioxidant activity of *Cordia myxa* L. and its hepatic protective potential. *Electric J. Environ. Agric. Food Chem.* **6(6)**, 2109-2118.

Al-Adhroey AH, Nor ZM, Al-Mekhlafi HM, Mahmud R. 2010. Ethnobotanical study on some Malaysian anti-malarial plants: A community based survey. – *Journal of ethnopharmacology* **132(1)**, 362-364.

Arshad M, Rao AR. 2001. Medicinal Plants of Cholistan Desert. *Medicinal Plants of Pakistan* 1.

Bandyopadhyay S, Mukherjee SK. 2009. Wild edible plants of Koch Bihar district, West Bengal. *Natural Product Radiance* **8(1)**, 64-72.

Carstairs SD, Luk JY, Tomaszewski CA, Cantrella FL. 2010. Ingestion of *Lantana camara* is not associated with significant effects in children. *Pediatrics* **126**, 1585-8.

Dhiman K, Gupta A, Sharma D, Gill N, Goyal A. 2012. A review of the medicinally important plants of the family *Cucurbitaceae*. *Asian Journal of Clinical Nutrition* **4(1)**, 16-26.

Hegazy AK, Al-Rovwaily SL, Faisal M, Alatar AA, El-Bana MI, Assaeed AM. 2013. Nutritive value and antioxidant activity of some edible wild fruits in the Middle East. *Journal of Medicinal Plant Research* **7(15)**, 938-946.

Khan FM. 2009. Ethno-veterinary medicinal usage of flora of Greater Cholistan Desert, Pakistan. *Pak. Vet. J.* **29(2)**, 75-80.

Kuppast IJ, Nayak P. 2006. Wound healing activity of *C. dichotoma* fruit. *Res. Article* **5(2)**, 99-103.

Malik HMA. 2001. Treatment through Herbs. - *Medicinal Plants of Pakistan* 21.

Martin GJ. 1995. *Ethnobotany: A Method Manual.* - People and Plants International Conservation, Routledge, Abingdon.

Naidu MT, Babu NC, Venkaiah M. 2013. Ethnic remedies against snakebite from Kotia hills of Vizianagaram district, Andhra Pradesh, India.-*Indian Journal of Natural Products and Resources* **4**, 194-196.

Nasir E, Ali SI. 1970-2002. *Flora of Pakistan.* National Herbarium, NARC, Islamabad and Department of Botany, University of Karachi, Karachi. Fasc **41**, 1-207.

Nasreen U, Khan MA. 2001. Some Problematical Medicinal Plants of Pakistan 117.

Nazarudeen A. 2010. Nutritional composition of some lesser-known fruits used by ethnic communities and local folks of Kerala, Ind. - *J. Traditional Knowl* **9(2)**, 398-402.

Panda T. 2010. Preliminary Study of Ethno-Medicinal Plants Used to Cure Different Diseases in Coastland Districts of Orissa, India. -*British J. Pharmacol. Toxicol* **1**, 67-71.

Pederson K. 2009. Importance of Fruits in diet. - Available at: <http://ezinearticles.com/? Importance-of-Fruits-in-Diet&id=133930>. Accessed May 20, 2009.

Rashid A, Marwat SK. 2006. Ethnobotanical study of important wild plants of Bahadur Khel Tract (Tehsil Banda Daud) in Karak District. *Gomal Univ. J. Res* **2(2)**, 165-172.

Rasingam L, Rehel SM. 2009. Major wild edible plants of the Nilgiri Biosphere Reserve in India. *Voices* **17**, 8-9.

Satyanarayana T, Mathews AA, Vijetha P. 2008. Phytochemical and Pharmacological Review of Some Indian Capparis Species. -Pharmacogn. Rev.Suppl **2(4)**, 36-45.

Shweta S, Mehta BK, Darshna M, Hemant N, Aditya M. 2012. A review on pharmacological activity of *Syzygium cumini* extracts using different solvents and their effective uses. *International Research Journal of Pharmacy* **3**, 54-58.

Srivastava S, Kapoor R, Thathola A, Srivastava RP. 2003. Mulberry (*Morus alba*) Leaves as Human Food: A New Dimension of Sericulture. *International Journal of Food Sciences and Nutrition* **54(6)**, 411-6.

Sultan A, Ullah-Khan F, Hussaain I, Khan MA, Ullah-Khan I. 2010. Evaluation of chemical analysis profile of *Citrullus colocynthis* growing in southern areas of Pakistan. *World Applied Science Journal* **10(4)**, 402-405.