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RESEARCH ARTICLE

INDIGENOUS MEDICINAL USAGE OF FAMILY ASTERACEAE IN SADDA LOWER KURRAM AGENCY: A CASE STUDY

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ABSTRACT

The ethno botany of the medicinal plants of Sadda Kurram is an important for understanding cultures and traditions of the area. The present study was aimed to document and perform quantitative evaluation of the medicinal plants used for different disorders in the study area. Medicinal plants were collected from different sites and its traditional use from herbal practitioners and native senior villagers was recorded. The fully dried specimens were then mounted on herbarium sheets. A set of voucher specimens were deposited to the Herbarium Hazara University, Mansehra, Pakistan (HUP). This study documents 20 medicinal plant species belonging to 18 genera and 20 species of family Asteraceae, most commonly used by the indigenous people. The botanical name, family name, part used, and the application of the plants have been provided in this paper. Leaves were the leading used part (10, 40%) followed by roots (4, 16%), flower 3 (12%). Stomach disorders were the most commonly treated ailments followed by diuretic and general body weakness. Highest used value was recorded for *Seriphidium kurramense* (UVi)=0.97 and lowest for *Sonchus asper* and *Lacunae nudicaulis* (UVi)=0.50 respectively. *Seriphidium kurramense* (RFCs=0.92) is most cited by the local people for ailments followed by *cichoriumintybus* (RFCs=0.77) and *Artemisia absinthium* (RFCs=0.74). The highest Consensus index (CI%=92.3) was recorded for *Launae nudicaulis* followed by *Conyzacandensis* (CI%=76.9) and *Sonchus asper* (CI%74.4) respectively. These plants communicate community of the study area from generation to generation through the cultural knowledge. So for its conservation, there is a dire need to document it and it is also recommended to evaluate the documented plants pharmacological efficacy.

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INTRODUCTION

Medicinal plants are worldwide used in various disciplines of health care formed the basis of traditional medicine practices for thousands of years by people; herbal, Ayurvedic, Unani and homeopathic medicines in the form of standardized extracts or herbs. The earliest records of plants usage as drugs are found in the Artharvaveda, the basis for Ayurvedic medicine (dating back to 2000 BCE), the clay tablets in Mesopotamia (1700 BCE), and the Eber Papyrus in Egypt (1550 BCE). Other renowned literature sources on medicinal plant —De Materia Medica, written by Dioscorides between CE 60 and 78, and —Pen Ts'ao Ching Classic of Materia Medica (written around 200 CE). (Prakash and Gupta., 2005; Mahmood et al., 2011; Rehman et al., 2013). Plants growing on the surface of the earth and usually have root, stem, leaves and produce fruits and seeds. Their importance as well as roles in nature cannot be over emphasized. (Nwachukwu et al., 2011).

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Medicinal plants play a key role to understand the vibrant relationships between biodiversity and sociogenic systems (Husain et al., 2008; Mahmood et al., 2011a). Medicinal plants have been a part of human society for combating disease since time immemorial. Nature has been provided a worthy source of medicinal plants and an impressive novel drugs have been isolated. To treat diseases Various medicinal plants have been used for years in daily life around the world. (Bhattacharya et al., 2014) traditional indigenous medicines plants are still used in developing countries and about 80% of the people still dependent on plants for their basic healthcare (Anon., 2002; Malik et al., 2010). Pakistan has a varied climate and is rich in medicinal herb, scattered over a large area. There are about 600 plant species identified as having medicinal values. In Pakistan medicinal plants are primarily used by Tibbia Dawakhana (herbal medical centers of indigenous physicians known as hakims). In Ayurvedic system of herbal treatment pharmaceutical industries are being commercially exploited for the extraction of various ingredients (Mahmood et al., 2003). In Pakistan medicinal plants under anthropogenic threats mainly due to the unawareness of local communities and authorities where medicinal plants grow.

Other threats to medicinal plants are over cutting for fuel wood, careless uprooting, consumption of medicinal plants and over grazing (Malik & Husain, 2007). In the present paper, an attempt has been made to record some of the major medicinal plants of Asteraceae in Sadda Lower Kurram.

Status of Asteraceae

The Asteraceae is the richest vascular plant family in the world, with 1600–1700 genera and 24,000–30,000 species (Funk *et al.*, 2005). They are easily distinguished by the florets grouped in capitula, and the fruit a cypsela often with a pappus. Asteraceae taxa can assume almost every life-form: herbs, succulents, lianas, epiphytes, trees, or shrubs, and they reach every environment and continent, except Antarctica (Funk *et al.*, 2005). It is also the largest plant family in Pakistan, represented by over 650 species distributed in 15 tribes. The account of three tribes Gnaphalieae, Inuleae and Plucheeae published in the next fascicle of Asteraceae which will also include a complete generic key of all the taxa found in Pakistan (Qaiser, 2007).

Economic uses

The importance of the Asteraceae is incalculable and largely indirect based on its contribution to the biodiversity of drier vegetation types throughout temperate zones, subtropics and tropics, often approaching 10 to 15% of floras. There are also a few species that contribute to food sources: sunflower (*Helianthus*), artichoke (*Cynara*), and lettuce (*Lactuca*). There are also many members that are cultivated as ornamentals including marigolds, zinnia, chrysanthemum, dahlia etc.

Study area

Kurram Agency is the tribal zone and found at the border of Afghanistan and Pakistan. It is located in Federally Administered Tribal Area (FATA) and lies in northwest Pakistan on border of Afghanistan. The total area of the agency is about 3,380 km². It occupies a significance geographical location. Kurram Agency is bordered by Afghanistan on the west and North, Orakzai and Khyber Agencies to the east, Kohat to the southeast, and Waziristan on the south. (wikipedia.org/wiki/Kurram_Valley).

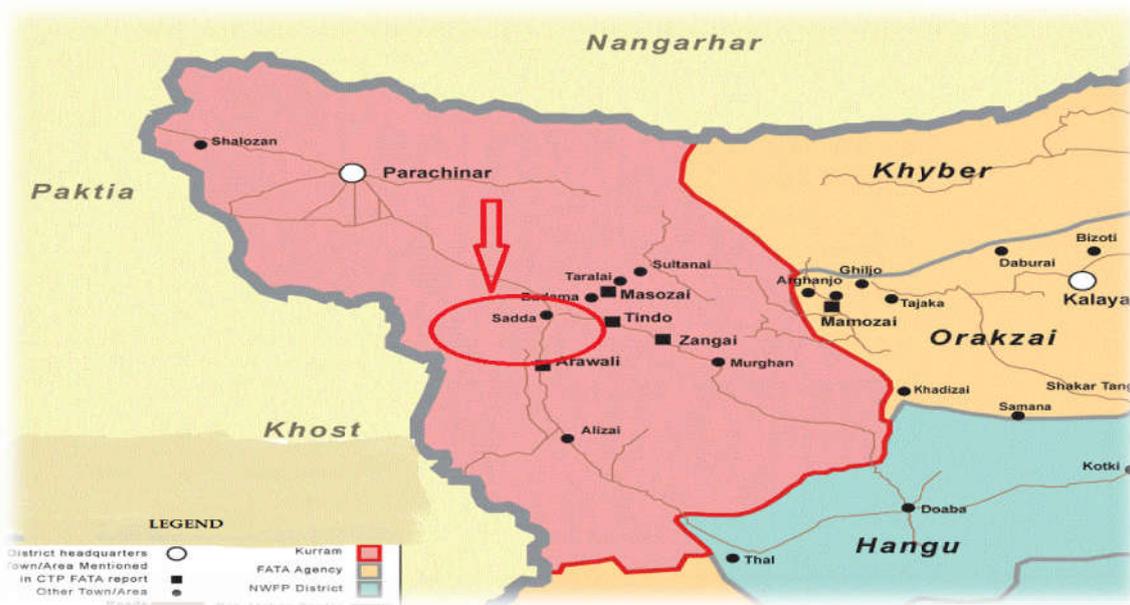


Fig.1 Study area Map

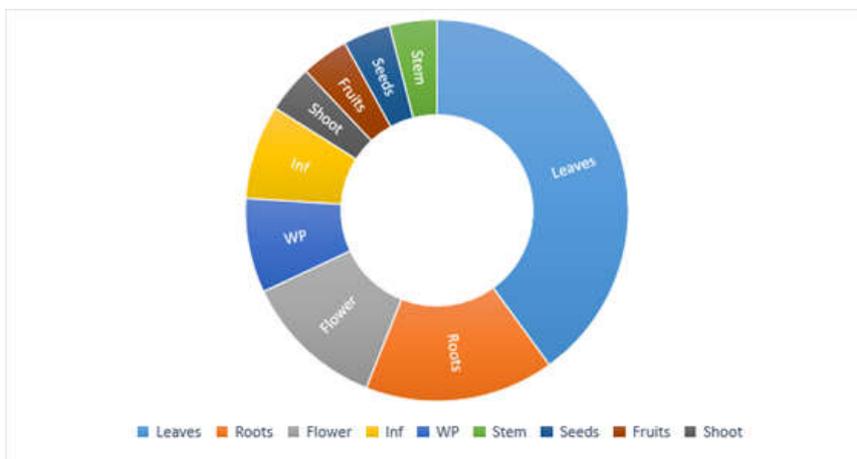


Fig.2. Part used for different ailments

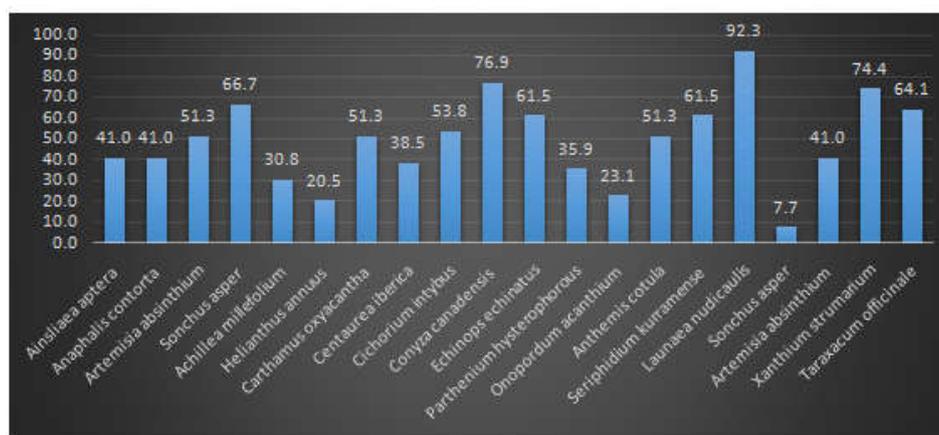


Fig. 6. Consensus index of medicinal plants cited by the informants for various ailments

Table 1. List of Plant used for different ailments in Sadda Kurram Agency

Botanical name	Ver.Name	Family	Part used	Medicinally uses	UVi	RFCs	CI%
<i>Ainsliaeaptera</i> DC.	Tor Panri	Asteraceae	L	Stomachache	0.64	0.41	41.0
<i>Anaphalis contorta</i> (D.Don) Hook.f.		Asteraceae	F, L	Chest pain, Inner bleeding	0.87	0.51	41.0
<i>Artemisia scoparia</i>	Mastyara	Asteraceae	L	Dandruff, Fever intermitent, Stomachache, Tonic, Vermifuge	0.81	0.67	51.3
<i>Sonchus asper</i> L.		Asteraceae	Sh and F	Tonic, Diuretic, Jaundice.	0.50	0.31	66.7
<i>Achillea millefolium</i> L.	Jarai	Asteraceae	WP	Stimulant, Tonic, Astringent, stops inner bleeding, Diuretic.	0.57	0.21	30.8
<i>Helianthus annuus</i> L.	Marastargi Gul	Asteraceae	Se	Whooping, cough, joint pains.	0.74	0.51	20.5
<i>Carthamus soxyacantha</i> M. Bieb.	BiBiMalga	Asteraceae	F	Infertility, treat Jaundice	0.58	0.38	51.3
<i>Centaurea iberica</i> Treviranus ex Sprengel,		Asteraceae	L and thorns	Burns, skin rashes, eye vision and defective lactation.	0.72	0.54	38.5
<i>Cichorium intybus</i> L.	Huan	Asteraceae	R	Appetizer, Body weakness, Joints swelling, Liver tonic, Muscular pain, Rheumatism	0.86	0.77	53.8
<i>Conyza canadensis</i> L. Cronquist		Asteraceae	WP	Diuretic, indigestion, dysentery, stomach gases, internal injuries, fever, cough	0.86	0.62	76.9
<i>Echinopsechinatus</i> Roxb..		Asteraceae	R	Carminative, Diuretic, Cough.	0.67	0.36	61.5
<i>Parthenium hysterophorous</i>		Asteraceae	WP	Herbicide, nematocidal, insecticide, anti-amoebic dysentery and anti-hysteria	0.82	0.23	35.9
<i>Onopordum acanthium</i> L.		Asteraceae	LR	Expectorant, anti-asthmatic, diuretic to treat nervousness, tetanus, carcinomas.	0.77	0.51	23.1
<i>Anthemiscotula</i> L.		Asteraceae	Infl	Gastrointestinal disorders, Stomachache,	0.80	0.62	51.3
<i>Seriphidium kurramense</i> (Qazilb.) Y. R. Ling, Bull.	Tarkha	Asteraceae	L	Anthelmintic, antimalarial, antipyretic	0.97	0.92	61.5
<i>Launaea nudicaulis</i> (L.) Hook.f.		Asteraceae	L	Constipation, fever, itches of skin, ulcer swelling, eczema, eruption, Rheumatism, Toothache	0.50	0.08	92.3
<i>Calendula officinalis</i> L.	Zeerigul	Asteraceae	L, st	Wound healing	0.67	0.41	7.7
<i>Artemisia absinthium</i> L.		Asteraceae	L, inflo	Worms, Abdominal Pain, Fever, Diabetes, Sprains	0.91	0.74	41.0
<i>Xanthium strumarium</i> L.	Zagoki	Asteraceae	R, F	Anthelmintic, Antipyretic, Epilepsy, Diuretic	0.89	0.64	74.4
<i>Taraxacum officinale</i> Weber		Asteraceae	R, L	Gastrointestinal remedy supporting digestion and liver function, diuretic, stimulant.	0.79	0.69	64.1

Key: L=Leaf, R=Root, F=Flower, wp= Whole plant, Se=Seed, Sh=Shoot, Inf= inflorescence, St=Stem.

Atotal 39 informants were interviewed (13 women and 26 men) through a structural questionnaire. The data were obtained and quantitatively analyzed by using (UVi), consensus index (CI%) and relative frequency citation (RFCs) The plant specimen were dried, poisoned, mounted on herbarium sheet and identified with flora of Pakistan and finally deposited in herbarium.

Statistical Analysis: Data were organized in Microsoft Excel sheets and analyzed through 3 quantitative ethnobotanical methods: Use Value (UVi), Relative Frequency Citations (RFCs) and Consensus index (CI%).

Use Value (UVi): The UVi was calculated using the formula proposed by (Phillipset al. 1994). UVi the use value of a species for an informant, where U_i = No. of use reports cited by each informant for a given plant species. N_i = Total No. of informants interviewed for a given plant species.

To calculate the use value of a species for an informant;

$$UV_i = \frac{\sum U_i}{N}$$

Relative Frequency of Citations (RFCs)

Relative Frequency of Citations was used to calculate the traditional value of each species by using the formula (Tardio and Pardo, 2008).

$$RFCs = \frac{FCs}{N}$$

Fcs = No. of informants who mentioned the use of the species.
N = Total no. of informants of the study. (In this study, N = 59)

Consensus index (CI%) (Rahman et al., 2016)

$$CI\% = \frac{n}{N} \times 100$$

RESULTS

In the present study 20 plant species were documented for various ailments belonging to 18 genera of family Asteraceae. Leaves were the leading part 10 (%) followed by roots 4(%), Flower 3 (%) and the remaining were less than 2 (%). The plant part used mostly for the stomach disorder. Regarding the treated ailments, 6 species are reported to be used to treat more than one disease. According to our results stomachs disorders were the most commonly treated ailments with medicinal plants in Sadda Kurram Agency they were followed by diuretic and general body weakness. The Family Asteraceae used for different ailments, but mostly used for Diuretic followed by vermifuge, Fever and stomachache respectively. Fig 3.

Graphical representation of used values of medicinal plant species recorded from Sadda Kurram Agency. The recorded medicinal used value ranging from (UVi) =0.50 to 0.97. the highest used value (UVi)=0.97 recorded for *Seriphidium kurramense* and the lowest range for *Sonchus asper* L. and *Lacunae nudicaulis* (UVi)=0.50 respectively. *Seriphidium kurramense* is mostly used by the local people having drastic effect and known to local people. While the local people have less knowledge about the *Sonchus asper* L. and *Lacunae nudicaulis*. (Fig.4). Figratic representation of the RFCs value showed that *Seriphidium kurramense* (RFCs=0.92) is mostly cited by the local people for the ailments followed by *cichorium intybus* (RFCs=0.77) and *Artemisia absinthium* (RFCs=0.74) while the remaining is less than RFCs = 69. While the minimum citation is recorded for the *Launaea nudicaulis* (RFCs=0.08). (Fig.5). The highest Consensus index (CI%=92.3) was recorded for the *Launaea nudicaulis* followed by *conyza Canadensis* (CI%=76.9) and *Sonchusasper* (CI%74.4) respectively (Fig.6).

DISCUSSION

Though a lot of work on medicinal plants from different families has been documented in different literature, but this paper is restricted to only 20 species of medicinal plants of Asteraceae in Kurram Agency. Many studies have been conducted on the indigenous uses of medicinal plants in Pakistan and Azad Kashmir (Ahmad et al., 2012a, b; Ishtiaq et al., 2012; Mahmood et al., 2011; Shinwari, 2010; describe indigenous knowledge of medicinal plants from northern areas of Pakistan. Ali & Qaisar (2009) reported Asteraceae was most dominating family in the study area (8 spp., 13.56%) followed by Rosaceae (4 spp., 6.78%). Leaves were highly utilized part (24spp., 25.26%) followed by whole plant (18spp., 19.15%), fruits and roots. While our result justifies the above statements that Leaves were the leading part 10 (%) followed by roots 4 (%), Flower 3 (%) and the remaining were less than 2 (%).

As the members of Asteraceae are predominantly herbaceous, whole plants are usually used to treat a majority of the diseases. Leaves were the dominant plant part used for the different ailments followed by roots and flowers. Diuretic is the leading ailment treated by Asteraceae. Hazrat et al., 2011 also reported medicinal plants of Sheringal Valley, 13 plants were used as diuretic, 14 astringents and 10 as stimulant the remaining used for different ailments. the highest used value (UVi)=0.97 recorded for *Seriphidium kurramense* and the lowest range for *Sonchus asper* L. and *Lacunae nudicaulis* (UVi)=0.50 respectively. Khan et al., 2015 investigated that *Aconitum heterophyllum* and *Rheum webbianum* with most used value. RFCs value showed that *Seriphidium kurramense* (RFCs 0.92) is mostly cited by the local people for the ailments followed by *cichorium intybus* (RFCs=0.77) and *Artemisia absinthium* (RFCs=0.74). Ahmad et al., 2014 reported that *Origanum vulgare*L.is mostly cited for the digestive disorder. The highest Consensus index (CI%=92.3) was recorded for the *Launaea nudicaulis* while Rahman et al. (2016) and Ijaz et al. (2016) also recorded *Ficus carica* is mostly cited plants species. local people used plant for various ailment viz, diuretic, stomachache, fever, body weakness and stimulant as well. These plants are the source of instruction among the community of the area and the indigenous knowledge should be transferred and aware them to conserve the plant and plant resources to the next generation to documents for pharmacological study.

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