

IDENTIFICATION AND PRESERVATION OF THE ETHNOBOTANICAL INDIGENOUS KNOWLEDGE ON PRECIOUS FLORA OF KHYBER PAKHTUNKHWA (PAKISTAN) FOR THE COMING GENERATION

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Abstract

This research has been carried out for finding and making record of indigenous plants that are used by communities living in Malakand. Plants were collected, preserved, labeled, deposited in the herbarium of the University of Malakand and identified with the help of flora of Pakistan. Purposive sampling was applied in the field investigation, where traditional therapists and elders helped to pin point medicinal plant practitioners and emphasis was laid on both women and men. Out of 55 plants, only a single species is used as sedative and in treatment of typhoid and premature ejaculation, three are used as a nerve tonic and antiseptic, four are used as a food/vegetable, seven are used in treatment of digestive disorders. Therapeutic uses of the compiled plants provide basic information that can aid scientists to conduct additional research dedicated to conservation of species and pharmacological studies of species with the greatest significance. These findings are based on the practical experience of the local elders and therefore medical professionals are needed to corroborate these valuable flora through proper research to reach a tangible outcome have more information about the indigenous plants as compared to the young.

Keywords: ethnobotany, identification, preservation, indigenous flora, medicinal uses, Pakistan

Introduction

The awareness of the importance of plants in human healthcare is important as scientific evaluation promises their future use especially in the development of new drugs for emerging diseases. The information on medicinal plants, dosages, and the ailments treated might be heavily eroded in the days to come because of the

observed poor record keeping and the increasing use of western medication. This research therefore can be used as a source of information for the conservation agencies to enable proper management of plant biodiversity and its resources.

It is widely known that through the ages, people took advantage of nature in order to meet their primary needs. This also applies to the usage of natural products as medication for a wide range of diseases (Gurib-Fakim, 2006; Trendowski, 2015). In fact, analyzes of dental plaques revealed evidence that approximately 50,000 years ago Neanderthals already used medicinal plants for therapeutic purposes (Hardy *et al.*, 2012). Despite the ancient use, the earliest written records about medicinal plants were found in Mesopotamia, dated to 2600 BCE, describing the use of cypress, cedar and myrrh oils for the treatment of infections and inflammation-derived cough and fever (Cragg and Newman, 2005). Plant materials are exploited in the pharmacy sector as both natural remedies and raw materials, and constituting a significant proportion of the world drug market (Ali & Venkatesalu, 2022). Interestingly, the populations of this region still use these plants and their extracts as medicines (Majolo *et al.*, 2019).

Pakistan occupies a unique position among all the developing countries and it has a great many different varieties of medicinal plants due to various adoption and climatic factors (Shuaib *et al.*, 2021). The Khyber Pakhtunkhwa, especially the Malakand region, has a lot of potential in the field of the indigenous plants and it has a lot of floral diversity but unfortunately, most of the youngster doesn't have the knowledge and value of this precious flora. The harvesting of these medicinal plants must be in a conserve manner and overexploitation must be

avoided otherwise the precious floral diversity could get lost in the plants can become threatened or endangered in future. Moreover, many plants have not yet been explored and can offer a variety of compounds of different structural types and biological potency in the development of new medicines due to lack of research in the Khyber Pakhtunkhwa area. Further research is needed on the search for potent antineoplastic agents (Giang and Otsuka, 2018). From cytotoxic approaches and also molecular management of cancer physiopathology, the goal which extend beyond eradicating the affected cells, is to control the cancer phenotype (Wallace, 2002). It is important to take in account the millenarian use of folk medicine, despite the lack of solid evidence for its use.

Objectives

1. To identify the indigenous flora of Khyber Pakhtunkhwa (Pakistan) and collect information about the associations of different parts with their functions.
2. To document and preserve the indigenous knowledge of floral diversity of Khyber Pakhtunkhwa (Pakistan) for the coming generation.

Materials and methods

Ethical statement: Research approval was obtained from the research ethical committee of University of Malakand. Verbal consent was

obtained from the participants before data collection.

Data collection: Field studies were conducted at 5 localities i.e., Malakand Chebaran, Jaban, Tora Jai, Kolyare and Bata, throughout the Piran hill of Malakand (figure 1) division from May to September 2021. Purposive sampling was applied in the field investigation, where traditional therapists and elders helped to pinpoint medicinal plant practitioners and emphasis was laid on both women and men. Information on ethnobotanical (medicinal plants, local names and their uses) base was gathered by carrying the collected specimens to the inhabitant of the nearby area on a predesigned questionnaire.



Figure 1. Map of KPK showing the study area

The informants were asked questions in their local languages, regarding traditional uses of plants and their vernacular names, distribution, morphology, and economical importance. observations were well documented, interviews

were recorded, and samples and processes were taped and photographed. It was to ensure all information was well recorded together with all necessary additional data and materials.

Identification of the ethnobotanical indigenous flora: Each plant was photographed along with voucher specimens for people and easy identification. The voucher numbers have been verified from the herbarium of the University of Malakand, herbarium of the Quaid-e-Azam University Islamabad, E-flora of Pakistan, herbarium of the Hazara University and herbarium of Pakistan PARC.

Preservation of the ethnobotanical indigenous flora: Collected plants materials has been dried, pressed, preserved, labeled, identified with the help of flora of Pakistan, and finally deposited in the herbarium of University of Malakand.

Data organization: Collected data was entered and organized in Microsoft Excel (2016).

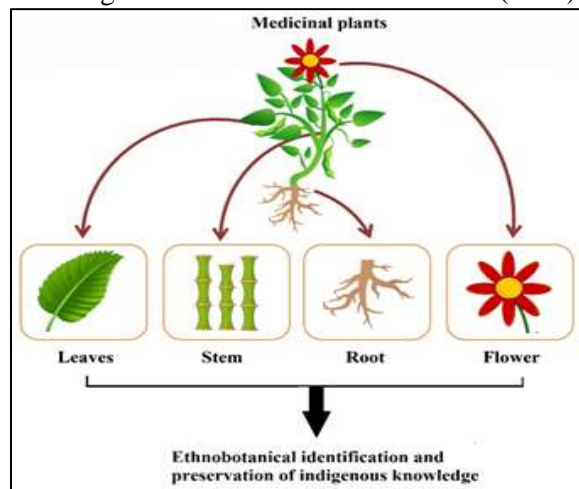


Figure 1. Graphical representation of the identification and preservation of the ethnobotanical indigenous flora of Khyber Pakhtunkhwa (Pakistan)

Results

The present study provides information on the uses of 55 ethnobotanical important indigenous floras. The plants studied are enumerated, arranged with their botanical name followed by local name, family name, parts used and medicinal uses (Table 1).

Most of these were medicinal plants which are used for specific diseases while some are used in the treatment of many diseases. Some plants were used as a fuel and furniture, other as fodder for cattle and some are cooked as vegetable. Majority of the plants are herbs and shrubs while very few are trees. Out of all these plants, only a single species is used as sedative and in treatment of typhoid and premature ejaculation, three are used as a nerve tonic and antiseptic, four are used a food/vegetable, seven are used in treatment of digestive disorders. In these plants 12 are used as a laxative diuretic, condiment and stimulant each. Use of plants in the studied area as tonic, aromatic and anthelmintic are about six about two are used as antidiabetic. Leaves of 15 plants are used for the intended purpose. 11 of those plants are used as a whole while in eight seeds are used by the locals, fruits of four plants are used and flowers of three plants are used.

All the plants have ethnobotanical values in the form of shoots, roots and rhizomes. Different ecological climatic conditions have been characterized with different plant diversity, hence pointing to some of the probable reasons

for similarities and differences of plants of medicinal value found in our study area and other extents. Data collected and analyzed from the region of study reveal remarkable differences in parts of the plant used, preparation mode of herbal medicine and their use as has been documented in other regions.

Many factors have been associated with the dangers faced by the flora in the study region. Informants' insights show that the main threats to plants of medicinal value were forest encroachment for agricultural expansion, overharvesting, overgrazing, and environmental degradation. Majority of the respondents indicated that agricultural activity was a significant danger to the existence of medicinal plants and their conservation because of an increase in human population.

Some respondents pointed out those medicinal plants within the area of study had other threats as a result of deforestation and loss of habitat. It was further noted that many of the listed plants were cultivated by the communities for example *Cannabis sativa*, *Acacia modesta wall*, *Caralluma tuberculata*, *Ficus palmata forssk*, *Morus lavaegata wallich*, *Mentha longifolia (linn) huds*, *Convolvulus arvensis*, *Mentha pierita*, *Nasturtium officinale*, *Dalbergia sissoo*, *Eucalyptus camaldulensis*, and *Jasminum officinale Linn*.

Discussion

Ethnomedicine, often referred to as traditional medicines, is a collection of customs that have been passed down orally via decades to address health-related issues. These customs are founded on centuries of experiences, and they are said to have contributed to the creation of modern medicine. Based on the most recent estimates, a significant segment of the population relies significantly on traditional healers and medicinal herbs mostly in emerging world regions to satisfy their demands for basic healthcare (Van Wyk & Prinsloo, 2018; Süntar, 2020). Although availability of the modern medicine may be there, many people in the developed countries have switched on to alternative therapies including medicinal herbs.

The Pakistan is the country has a lot of potential in the field of the indigenous medicinal plants and it has a lot of diversity in the floral diversity having a lot of important medicinal plants throughout the country. The ethno-botanically important plants are a source of income and cure for the local people of Khyber Pakhtunkhwa. The precious knowledge of these plants, which the elders have had acquired familiarity on from their parents and close relatives, must be utilized, documented and preserved for the coming generation as the knowledge as depleting away along with the old generation.

The ethnobotanical research carried out in KPK, Pakistan, was expanded upon by this

investigation. The area with weak indigenous knowledge preservation, conserving the local traditional knowledge, reporting novel as well as infrequently recorded therapeutic characteristics of medicinal plants, should be validated empirically. Rehman *et al.* (2015) claim that because the target area is small and contains fewer plant species with limited traditional knowledge, it can be used as a starting point for future research focusing on uncommon or unreported plant species of significant pharmacological and photochemistry value with active metabolites that can increase the sources of novel drugs (Boström *et al.*, 2018).

To find new resources and possible compounds for therapeutic uses, numerous drug companies have lately updated their tactics in the field of natural product research. Due to its methodology, which may be backed by experimental evidence, ethnopharmacological knowledge may be helpful for the discovery and development of innovative, safe, and economical medications. The ethnopharmacological features of herbal medicine and the procedure of discovering plant-based drugs will be highlighted in the current study, and significant concerns in their usage as supplemental medicines would be highlighted.

Conclusion

The locals primarily use infusion, decoction, and concoction to prepare plant remedies, which they then apply topically or orally. Treatments for gastrointestinal disorders,

respiratory illnesses, body pain, dermatitis issues, blood circulatory diseases, etc. are all provided by ethnobotanical plant therapies. It was found that *Cannabis sativa*, *Artemisia absinthium* L, *Caralluma tuberculata*, *Solanum nigrum*, *Mirabilis jalapa*, *Artemisia indica*, *Amarabthus viridis*, *Asphodelus tenuifolius*, *Carthamus oxycantha* bieb, *Jasminum officinale* Linn and *Parthenium hysterophorous* can provide relief from pain. *Celtis australis*, *Mirabilis jalapa* and *Foeniculum vulgare* can be used in colic.

The leaves of *Foeniculum vulgare* were beneficial in lactating mothers to increase milk secretion. *Malvaneg lecta*, *Nasturtium officinale*, *Ailantus altissima* and *Euphorbia hirta* could be used in the treatment of various respiratory disorders. Leaves and flowers of the *Carthamus oxycantha* were useful in male infertility. The fever could be cured by the *Mentha longifolia*, *Convolvulus arvensis*, *Zanthoxylu*, *M armatam*, *Solanum nigrum* and *Amarabthus viridis*. Majority of the plants included in this study were found to be helpful against multiple disorders. Significant action must be taken to ensure the survival of these Pakistani plants from Malakand.

Recommendation

Planting fast-growing plant species for the production of charcoal would greatly help in lowering the harvesting of medicinal plants and enhance the conservation of vulnerable plant species. Proper grazing management of domestic animals should be enforced by the authorities in the forest reserves to reduce overgrazing

especially in the areas of the forest that are more susceptible to overgrazing like the forest periphery. Proper harvesting regulations should be implemented and followed to reduce overharvesting and overexploitation of medicinal plants especially those species that are used more frequently to treat common ailments. The harvesting of these plants must be in a conserve manner and overexploitation must be avoided otherwise the precious floral diversity could get lost and the plants can become threatened or endangered in future.

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REFERENCES

- Ahmad, M., I. Waheed, M. Khalil-ur-Rehman, U. Niaz, and S. S. Hassan. 2007. A review on *Carthamus oxycantha*. *Pak. J. Pharm.*, 20(1).

- Ahmad, S., F. Ullah, M. Ayaz, A. Ahmad, A. Sadiq and S. Mohani. 2019. Nutritional and medicinal aspects of *Rumex hastatus* D. Don along with *in vitro* anti-diabetic activity. *Int. J. Food Prop.*, 22(1): 1733-1748.
- Ahmad, S., F. Ullah, M. Ayaz, A. Sadiq, and M. Imran. 2015. Antioxidant and anticholinesterase investigations of *Rumex hastatus* D. Don: potential effectiveness in oxidative stress and neurological disorders. *Biol. Res.*, 48(1): 1-8.
- Al-Badri, H. B., W. M. Al-Ani, and A. M. A. Naser. 2016. Detection of nicotine in *Equisetum arvense* grown naturally in Iraq. *Al-Mustansiriyah J. Pharm. Sci.*, 16(2): 40-44.
- Ali, S. I., and V. Venkatesalu. 2022. Botany, traditional uses, phytochemistry and pharmacological properties of *Saussurea costus*—An endangered plant from Himalaya—A review. *Phytochem. Lett.*, 47: 140-155.
- Ali, S. S., K. Hussain, K. Nawaz, K. H. Bhatti, Z. Bashir, A. Nazeer, and E. H. Siddiqi. 2020. Ethnobotanical knowledge and folk medicinal significance of the flora of district Gujrat, Punjab, Pakistan. *Herba Polonica*, 66(1).
- Al-Snafi, A. E. 2018. Traditional uses of Iraqi medicinal plants. *IOSR J. Pharm.*, 8(8): 32-96.
- Al-Snafi, A. E. 2019. Medical benefit of *Malva neglecta*—A review. *IOSR J. Pharm.*, 9(6): 60-67.
- Amjad, M. S. 2015. Ethnobotanical profiling and floristic diversity of Bana Valley, Kotli (Azad Jammu and Kashmir), Pakistan. *Asian Pacific J. Trop. Biomed.*, 5(4): 292-299.
- Archana, S. 2012. An ethnobotanical study of medicinal plants in Sonebhadra District of Uttar Pradesh, India with reference to their infection by foliar fungi. *J. Med. Plants Res.*, 6(14): 2727-2746.
- Arijit, S., and B. Arpita. 2013. Documentation of some ethno-medicinal plants of family Lamiaceae in Bankura district, West Bengal, India. *Int. Res. J. Biol. Sci.*, 2(6): 63-65.
- Arun, M., S. Satish, and P. Anima. 2016. Phytopharmacological profile of *Jasminum grandiflorum* Linn. (Oleaceae). *Chin. J. Int. Med.*, 22(4): 311-320.
- Batiha, G. E. S., A. Olatunde, A. El-Mleeh, H. F. Hetta, S. Al-Rejaie, S. Alghamdi and N. Rivero-Perez. 2020. Bioactive compounds, pharmacological actions, and pharmacokinetics of wormwood (*Artemisia absinthium*). *Antibiotics*, 9(6): 353.
- Bharath, M., E. L. R. Tulasi, K. Sudhakar, and M. C. Eswaraiah. 2013. *Dalbergia sissoo* DC—An important medicinal plant. *Int. J. Res. Pharm. Chem.*, 3(2): 384-388.
- Bibi, S., S. Ullah, A. Hafeez, M. N. Khan, M. A. Javed, B. Ali and S. Selim. 2022. Exogenous Ca/Mg quotient reduces the inhibitory effects of PEG induced osmotic stress on *Avena sativa* L. *Braz. J. Biol.*, 84.
- Bibi, Y., S. Tabassum, K. Zahara, T. Bashir, and S. Haider. 2015. Ethnomedicinal and pharmacological properties of *Caralluma tuberculata* NE Brown—A review. *Pure Appl. Biol.*, 4(4): 503.
- Boeing, T., K. G. Moreno, A. Gasparotto, L. Mota da Silva and P. de Souza. 2021. Phytochemistry and pharmacology of the genus *Equisetum* (Equisetaceae): A narrative review of the species with therapeutic potential for kidney diseases. *Evidence-based Compl. Alt. Med.*, 2021.
- Boström, J., D. G. Brown, R. J. Young and G. M. Keserü. 2018. Expanding the medicinal chemistry synthetic toolbox. *Nat. Rev. Drug Disc.*, 17(10): 709-727.
- Buell, P. D. and E. N. Anderson. 2021. The Medicinals. *In Arabic Medicine in China* (pp. 184-381). Brill.

- Dahmani, M. M., R. Laoufi, O. Selama and K. Arab. 2018. Gas chromatography coupled to mass spectrometry characterization, anti-inflammatory effect, wound-healing potential, and hair growth-promoting activity of Algerian *Carthamus caeruleus* L (Asteraceae). *Ind. J. Pharm.*, 50(3): 123.
- Das, B. K., A. V. Swamy, B. C. Koti and P. C. Gadad. 2019. Experimental evidence for use of *Acorus calamus* (asarone) for cancer chemoprevention. *Heliyon*, 5(5): e01585.
- Di Napoli, A. and P. Zucchini. 2021. A comprehensive review of the benefits of *Taraxacum officinale* on human health. *Bull. Nat. Res. Centre*, 45(1), 1-7.
- Dilshad, M., N. Riaz, M. Saleem, N. Shafiq, M. Ashraf, T. Ismail and A. Jabbar. 2016. New lipooxygenase and cholinesterase inhibitory sphingolipids from *Carthamus oxyacantha*. *Nat. Prod. Res.*, 30(16): 1787-1795.
- Djeussi, D. E., J. A. Noumedem, M. Mihasan, J. R. Kuate and V. Kuete. 2020. Antioxidant activities of methanol extracts of thirteen cameroonian antibacterial dietary plants. *J. Chem.*, 2020.
- Eeep, D., K. Ramanjeet, and D. Seema. 2011. A review on *Justicia adhatoda*: A potential source of natural medicine. *Afr. J. Plant Sci.*, 5(11): 620-627.
- Fatima, I., S. Kanwal, and T. Mahmood. 2018. Evaluation of biological potential of selected species of family Poaceae from Bahawalpur, Pakistan. *BMC Comp. Alt. Med.*, 18(1): 1-13.
- Haq, F. 2012. The ethno botanical uses of medicinal plants of Allai Valley, Western Himalaya Pakistan. *Int. J. Plant Res.*, 2(1): 21-34.
- Haq, F. U., A. Ali, N. Akhtar, N. Aziz, M. N. Khan, M. Ahmad and S. G. Musharraf. 2020. A high-throughput method for dereplication and assessment of metabolite distribution in *Salvia* species using LC-MS/MS. *J. Adv. Res.*, 24: 79-90.
- Herro, E., and S. E. Jacob. 2010. *Mentha piperita* (peppermint). *Dermatitis*, 21(6): 327-329.
- Hossain, M. A. 2019. Biological and phytochemicals review of Omani medicinal plant *Dodonaea viscosa*. *J. King Saud University-Sci.*, 31(4): 1089-1094.
- Jahan, S., T. Azad, A. Ayub, A. Ullah, T. Afsar, A. Almajwal and S. Razak. 2019. Ameliorating potency of *Chenopodium album* Linn. and vitamin C against mercuric chloride-induced oxidative stress in testes of Sprague Dawley rats. *Env. Health Preventive Med.*, 24(1): 1-13.
- Joshi, Y., A. K. Joshi, N. Prasad and D. Juyal. 2014. A review on *Ficus palmata* (wild himalayan fig). *The J. Phytopharm.*, 3(5): 374-377.
- Kaushik, P., D. Kaushik and S. L. Khokra. 2013. Ethnobotany and phytopharmacology of *Pinus roxburghii* Sargent: a plant review. *J. Integ. Med.*, 11(6): 371-376.
- Khan, M. P. Z., M. Ahmad, M. Zafar, S. Sultana, M. I. Ali and H. Sun. 2015. Ethnomedicinal uses of edible wild fruits (EWFs) in Swat Valley, Northern Pakistan. *J. of Ethnopharm.*, 173: 191-203.
- Khumukcham, N., D. Biswas, N. S. Singh, and L. Deb. 2016. Prospects for development of biomedicines from the medicinal plants of Northeastern India. In *Herbal Insecticides, Repellents and Biomedicines: Effectiveness and Commercialization* (pp. 147-187). Springer, New Delhi.
- Khursheed, A. and V. Jain. 2021. Oxidative stress-mediated caspase-dependent intrinsic apoptosis and proautophagic therapeutic potential of *Salvia moorcroftiana* Wall. ex Benth. growing





- in the Kashmir Valley, India. *Biomed. Res. Ther.*, 8(11): 4718-4727.
- Kicel, A. 2020. An overview of the genus *Cotoneaster* (Rosaceae): phytochemistry, biological activity, and toxicology. *Antioxid.*, 9(10): 1002.
- Kumar, K., R. Mehra, R. P. Guiné, M. J. Lima, N. Kumar, N., R. Kaushik and H. Kumar. 2021. Edible Mushrooms: A comprehensive review on bioactive compounds with health benefits and processing aspects. *Foods*, 10(12): 2996.
- Kumar, S., R. Malhotra and D. Kumar. 2010. *Euphorbia hirta*: Its chemistry, traditional and medicinal uses, and pharmacological activities. *Pharmacog. Rev.*, 4(7), 58.
- Kunwar, L., S. Gautam, N. Dhama, H. A. Jan, M. A. Turi, W. Hussain, N. Y. Paniagua-Zambrana. 2021. *Solanum aculeatissimum* Jacq. *Solanum nigrum* L. *Solanum surattense* Burm. f. Solanaceae. In *Ethnobotany of the Himalayas* (pp. 1-26). Cham: Springer International Publishing.
- Lanka, S. 2018. A review on *Aloe vera*-The wonder medicinal plant. *J. Drug Del. Therap.*, 8(5): 94-99.
- Li, Q. Y., M. Munawar, M. Saeed, J. Q. Shen, M. S. Khan, S. Noreen, C. X. Li. 2021. *Citrullus colocynthis* (L.) Schrad (Bitter Apple Fruit): Promising traditional uses, pharmacological effects, aspects, and potential applications. *Front. Pharm.*, 12.
- Li, Q. Y., M. Munawar, M. Saeed, J. Q. Shen, M. S. Khan, S. Noreen, and C. X. Li. 2021. (Apple Fruit): Promising traditional uses, pharmacological effects, aspects, and potential applications.
- Liya, F. I., M. F. Yasmin, N. S. Chowdhury, T. K. Charu and I. B. Fatema. 2021. *Mirabilis jalapa*: A review of ethno and pharmacological activities. *Adv Med. Plant Res.*, 9: 1-10.
- Mahboubi, M. 2019. *Foeniculum vulgare* as valuable plant in management of women's health. *J. Menopausal Med.*, 25(1): 1-14.
- Majeed, M., K. H. Bhatti, M. S. Amjad, A. M. Abbasi, R. W. Bussmann, F. Nawaz, and K. S. Ahmad. 2020. Ethno-veterinary uses of poaceae in Punjab, Pakistan. *PLoS one*, 15(11): e0241705.
- Majolo, F., L. K. B. D. Oliveira, D. J. Marmitt, I. C. Bustamante-Filho and M. I. Goettert. 2019. Medicinal plants and bioactive natural compounds for cancer treatment: Important advances for drug discovery. *Phytochem. Lett.*, 31: 196–207.
- Malakar, M. and S. Biswas. 2020. *Mirabilis*: Medicinal uses and conservation: useful tropical plant. *Floriculture and Ornamental Plants*, 1-57.
- Mehra, P., A. R. Sahoo, B. S. J. Rajakumar, J. P. Singh, B. S. Arya, A. Khurana and R. K. Manchanda. 2022. Homoeopathic pathogenetic trial of *Mentha piperita* L.: A multi-centric, double-blind, randomised and placebo-controlled trial. *Ind. J. Res. Homoeopathy*, 16(1): 2.
- Mikaili, P., S. Mojaverrostami, M. Moloudizargari, and S. Aghajanshakeri. 2013. Pharmacological and therapeutic effects of *Mentha Longifolia* L. and its main constituent, menthol. *Ancient Sci. Life*, 33(2): 131.
- Mohammed, G. J. and I. H. Hameed. 2018. Anti-fungal, antitumor and anti-inflammatory activity of *Acorus calamus*. *Ind. J. Public Health Res. Devel.*, 9(3): 254-258.
- Mudrikah, Y. B., K. Z. Shaista, Tabassum and S. H. Tasneem. 2021. 01. Ethnomedicinal and pharmacological properties of *Caralluma tuberculata* NE Brown-A review. *Pure Appl. Biol.*, 4(4): 503-510.
- Mushir, A., N. Jahan, N. Ashraf and M. I. Khan. 2015. Pharmacological and therapeutic potential of *Oxalis corniculata*. *Discovery Phytomed. J. Nat. Prod. Res. Ethnopharm.*, 2(3): 18-22.





- Negi, A., K. Dobhal and P. Ghildiyal. 2018. Antioxidant potential and effect of extraction solvent on total phenol content, flavonoids content and tannin content of *Ficus palmata* Forssk. *Int. J. Pharm. Sci. Rev. Res*, 49(2): 19-24.
- Pal, R. S., Y. Pal and P. Wal. 2019. A review on post pregnancy healer herbs. *Curr. Women's Health Rev.*, 15(2): 102-108.
- Parra, S. A., K. Gaur, L. S. Ranawat and M. I. Rather. 2018. An Overview on various aspects of plant *Berberis Lycium* Royale. *Am. J. Pharmacol. Sci.*, 6: 19-24.
- Patel, S. 2011. Harmful and beneficial aspects of *Parthenium hysterophorus*: an update. *Biotech.*, 1(1): 1-9.
- Paul, A., A. Kumar, G. Singh and A. Choudhary. 2018. Medicinal, pharmaceutical and pharmacological properties of *Zanthoxylum armatum*: A Review. *J. Pharmacogn. Phytochem.*, 7(4)., 892-900.
- Poonia, A. and A. Upadhyay. 2015. *Chenopodium album* Linn: review of nutritive value and biological properties. *J. Food Sci. Tech.*, 52(7): 3977-3985.
- Prabhuji, S. K., D. Srivastava, R. Srivastava and S. Sheikh. 2011. *Adhatoda zeylanica* Medic.: A versatile plant with wide spectrum medicinal activities. *Med. Plants-Int. J. Phytomed. Related Ind.*, 3(1): 85-88.
- Rahman, H. M. A., M. F. Rasool I. Imran. 2019. Pharmacological studies pertaining to smooth muscle relaxant, platelet aggregation inhibitory and hypotensive effects of *Ailanthus altissima*. *Evidence-Based Compl. Alt. Med.*, 2019.
- Rahman, S. U., Z. Ullah, A. Ali, M. A. Aziz, N. Alam, H. Sher and I. Ali. 2022. Traditional knowledge of medicinal flora among tribal communities of Buner Pakistan. *Phytomed. Plus*, 2(3): 100277.
- Raja, R., T. Z. Bokhari, S. Ahmad, S. A. Malik, K. Hussain and K. Nadeem. 2020. Ethno-medicinal survey for some wild plants of Muzaffarabad, Azad Jammu & Kashmir, Pakistan. *J. Biores. Manag.*, 7(3): 1.
- Rashid, U. and M. R. Khan. 2021. Phytochemicals of *Periploca aphylla* Dcne. ameliorated streptozotocin-induced diabetes in rat. *Env. Health Preventive Med.*, 26(1): 1-14.
- Rehman, A., K. Hussain, K. Nawaz, N. Arshad, I. Iqbal, S. S. Ali, U. Arif. 2020. Indigenous knowledge and medicinal significance of seasonal weeds of district Gujrat, Punjab, Pakistan. *Ethnobot. Res. Appl.*, 20: 1-19.
- Rehman, K., M. A. Khan, Z. Ullah, H. J. Chaudhary. 2015. An ethno botanical perspective of traditional medicinal plants from the Khattak tribe of Chonthra Karak, Pakistan. *J. Ethnopharm.*, 165: 251-259.
- Robson, P. 2001. Therapeutic aspects of cannabis and cannabinoids. *The Brit. J. Psychiatry*, 178(2): 107-115.
- Rodrigues, E. L., G. Marcelino, G. T. Silva, P. S. Figueiredo, W. S., Garcez, J. Corsino and K. D. C. Freitas. 2019. Nutraceutical and medicinal potential of the *Morus* species in metabolic dysfunctions. *Int. J. Mol. Sci.*, 20(2): 301.
- Sabo, V. A. and P. Knezevic. 2019. Antimicrobial activity of *Eucalyptus camaldulensis* Dehn. plant extracts and essential oils: A review. *Indus. Crops Prod.*, 132: 413-429.
- Saleem, B., M. Islam, H. Saeed, F. Imtiaz, M. Asghar, Z. Saleem and S. Naheed. 2018. Investigations of *Acacia modesta* Wall. leaves for *in vitro* anti-diabetic, proliferative and cytotoxic effects. *Braz. J. Pharm. Sci.*, 54.
- Saleem, M., A. Iftikhar, M. Asif, K. Hussain, P. A. Shah, A. Saleem and H. S. Yaseen. 2021. *Asphodelus tenuifolius* extracts arrested inflammation and arthritis through modulation of TNF- α , NF- κ B, ILs, and COX-2 activities in *in vivo*






- models. *Inflammopharm.*, 29(2): 483-497.
- Sen, S. and R. Chakraborty. 2011. The role of antioxidants in human health. *In Oxidative stress: diagnostics, prevention, and therapy* (pp. 1-37). American Chemical Society.
- Shah, M. H., I. Mukhtar and S. N. Khan. 2010. Medicinal importance and association of pathological constraints with *Dalbergia sissoo*. *Pak. J. Phytopathol.*, 22(2): 135-138.
- Shahrajabian, M. H., W. Sun, A. Magadlela, S. Hong and Q. Cheng. 2021. Fenugreek cultivation in the middle east and other parts of the world with emphasis on historical aspects and its uses in traditional medicine and modern pharmaceutical science. *In Fenugreek* (pp. 13-30). Springer, Singapore.
- Sharma, S., V. P. Sharma, S. Kumar, A. Sharma, K. Manorma and P. K. Chauhan. 2022. An introduction to wild mushrooms and their exploitation for human well-being: An overview. *Wild Mushrooms*, 3-21.
- Shuaib, M., F. Hussain, A. Rauf, F. Jan, M. Romman, R. Parvez and N. A. Shah. 2021. Traditional knowledge about medicinal plant in the remote areas of Wari Tehsil, Dir Upper, Pakistan. *Braz. J. Biol.*, 83.
- Singh, R., S. De and A. Belkheir. 2013. *Avena sativa* (Oat), a potential nutraceutical and therapeutic agent: an overview. *Crit. Rev. Food Sci., Nut.*, 53(2): 126-144.
- Singh, V., A. Singh, I. P. Singh and B. D. Kumar. 2021. Phytomedicinal properties of *Cynodon dactylon* (L.) pers.(durva) in its traditional preparation and extracts. *Phytomed. Plus*, 1(1): 100020.
- Sofowora A, E. Ogunbodede and A. Onayade. 2013. The role and place of medicinal plants in the strategies for disease prevention. *Afr. J. Tradit. Complement. Alter. Med.*, 10(5): 210-29.
- Soromessa, T. 2011. *Heteropogon contortus* (L.) P. Beauv. ex Roem. & Schult. [Internet] Record from PROTA4U. Brink, M. & Achigan-Dako, E.G. (Editors). *PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale)*, Wageningen, Netherlands.
- Srivastava, C. 2009. Diversity of medicinal plants in North Eastern Uttar Pradesh. *Ethnobot. Med. Plants India Nepal*, 3(3): 231.
- Subhan, N., G. E. Burrows, P. G. Kerr and H. K. Obied. 2018. Phytochemistry, ethnomedicine, and pharmacology of *Acacia*. *Studies Nat. Prod. Chem.*, 57: 247-326.
- Süntar, I. 2020. Importance of ethnopharmacological studies in drug discovery: role of medicinal plants. *Phytochem. Rev.* 19(5): 1199-1209.
- Thakare, P. O. 2020. *Aloe Vera*: A plant with many uses. *Int. J. Prog. Res. Sci. Eng.*, 1(2): 82-84.
- Tiwari, R., S. K. Latheef, I. Ahmed, H. Iqbal, M. H. Bule, K. Dhama and M. R. Farag. 2018. Herbal immunomodulators-a remedial panacea for designing and developing effective drugs and medicines: current scenario and future prospects. *Curr Drug Met.*, 19(3): 264-301.
- Ullah, I., J. A. Khan, M. Shahid, A. Khan, A. Adhikari, P. A. Hannan and U. Farooq. 2016. Pharmacological screening of *Monothea buxifolia* (Falc.) A. DC. for antinociceptive, anti-inflammatory and antipyretic activities. *BMC Comp. Alt. Med.*, 16(1): 1-8.
- Van Wyk, A. S. and G. Prinsloo. 2018. Medicinal plant harvesting, sustainability and cultivation in South Africa. *Biol. Conservation*, 227: 335-342.
- Vekariya, S., K. Nishteswar, B. R. Patel and M. Nariya. 2016. Evaluation of analgesic and antipyretic activities of Mahanimba






- (*Melia azedarach* Linn.) leaf and root powder. *Ayu.*, 37(2): 140.
- Verma, K. K., B. Kumar, H. Raj, and A. Sharma. 2021. A review on chemical constituents, traditional uses, pharmacological studies of *Zanthoxylum armatum* (rutaceae). *J. Drug Del. Ther.*, 11(2-S): 136-142.
- Wali, R., M. F. Khan, A. Mahmood, M. Mahmood, R. Qureshi, K. S. Ahmad and Z. U. Mashwani. 2022. Ethnomedicinal appraisal of plants used for the treatment of gastrointestinal complaints by tribal communities living in Diamir district, Western Himalayas, Pakistan. *PloS one*, 17(6): e0269445.
- Yalçinkaya, E., S. Özgüç, Y. O. Törer and U. Zeybek. 2019. The importance of the medicinal plant *Nasturtium officinale* L. in the anticancer activity research. *J. Sci. Perspectives*, 3(2): 159-164.
- Yang, Y., X. Chen, F. Luan, M. Wang, Z. Wang, J. Wang and X. He. 2021. *Euphorbia helioscopia* L.: A phytochemical and pharmacological overview. *Phytochem.*, 184: 112649.
- Zhang, J. S., N. N. Zhao, Q. Z. Liu, Z. L. Liu, S. S. Du, L. Zhou and Z. W. Deng. 2011. Repellent constituents of essential oil of *Cymbopogon distans* aerial parts against two stored-product insects. *J. Agr. Food Chem.*, 59(18): 9910-9915.






Table 1. Ethnobotanical indigenous knowledge on precious flora of Khyber Pakhtunkhwa (Pakistan)






Voucher number	Picture	Botanical name	Local name	Family	Part used	Therapeutic uses	References
10432		<i>Cannabis sativa</i>	Bhang	<i>Solanaceae</i>	Leaf/shoot	Pain, spasms, asthma, insomnia, depression, and loss of appetite	Robson, 2001
BCN 56573		<i>Artemisia absinthium</i> L.	Tarkha	<i>Asteraceae</i>	Shoot	Hepatocyte enlargement, hepatitis, gastritis, jaundice, wound healing, splenomegaly, dyspepsia, indigestion, flatulence, gastric pain, anemia, and anorexia	Batiha <i>et al.</i> , 2020
10422		<i>Avena sativa</i> L.	Jamdaray	<i>Poaceae</i>	Spikes	Antispasmodic, antitumor, diuretic, neurotonic, antioxidant, anti-inflammatory, wound healing, immunomodulatory, antidiabetic, anticholesterolaemic	Singh <i>et al.</i> , 2013; Bibi <i>et al.</i> , 2022
DAVFP 28757		<i>Agaricus campestris</i> L.	Kharerhy	<i>Agaricaceae</i>	Whole plant	Cancer, type 2 diabetes, high cholesterol, arteriosclerosis, antitumor, antiaromatase, antimicrobial, immunomodulatory	Kumar <i>et al.</i> , 2021; Sharma <i>et al.</i> , 2022

HPM-460		<i>Ajuga bracteosa</i>	Botie	<i>Lamiaceae</i>	Spikes	Acne, pimples, stomach disorders, ear and throats infection, headache, rheumatism, gout, palsy, amenorrhea, astringent, febrifugal, stimulant, tonic, and diuretic properties	Srivastava, 2009
175315		<i>Acacia modesta</i> Wall	Palosa	<i>Mimosaceae</i>	Stem and gum	Leprosy, wound healing, dysentery, cough, venereal diseases, bacterial infection and backache	Subhan <i>et al.</i> , 2018; Saleem <i>et al.</i> , 2018
10446		<i>Cotoneaster nummularia</i> fiseh and mey	Kharawa	<i>Rosaceae</i>	Stem and gum	Haemorrhoids, diabetes	Khan <i>et al.</i> , 2015; Kicel, 2020
10439		<i>Chenopodium album</i> L.	Sarmay	<i>Chenopodaceae</i>	Leaves and young shoots	Anthelmintic, cardiotonic, carminative, digestive, diuretic, laxative, peptic ulcer, dyspepsia, flatulence, strangury, pharyngopathy, splenopathy, ophthalmopathy and general debility	Poonia and Upadhayay 2015; Jahan <i>et al.</i> , 2019






10436		<i>Celtis australis</i>	Tagha	<i>Callabaceae</i>	Bark, fruit and stem	Amenorrhea, heavy menstrual bleeding and colics, astringent, and it is administered orally for the treatment of diarrhea, dysentery and peptic ulcers.	Haq, 2012
		<i>Caralluma tuberculata</i>	Pamankay	<i>Asteraceae</i>	Shoot	Diabetes, rheumatism, leprosy, peptic ulcer, inflammation, jaundice, dysentery, constipation, stomach pain, hepatitis B and Cantiseptic.	Bibi <i>et al.</i> , 2015; Mudrikah <i>et al.</i> , 2021
10435		<i>Carthamus oxycantham</i> Bieb.	Azghibotay	<i>Asteraceae</i>	Flowers and leaves	Cerebral thrombosis, male infertility, rheumatism and bronchitis	Ahmad <i>et al.</i> , 2007; Dilshad <i>et al.</i> , 2016
10431		<i>Calotropis procera</i> (wild) r. Brown	Spalmai	<i>Asclepiadaceae</i>	Whole plant	Skin diseases such as boils, scabies, sores, as a tonic and purgative	Rehman <i>et al.</i> , 2015; Archana, 2012
10457		<i>Dodonea viscosa</i> (L.) Jacq.	Ghwaraskay	<i>Sapindaceae</i>	Leaves	Laxative, spasmolytic, antiviral, anti-inflammatory, antimicrobial and hypotensive agents.	Hossain, 2019





10462		<i>Equisetum arvense</i> L.	Bandakay	<i>Equisetaceae</i>	Shoot	Stop bleeding, high blood pressure, heal ulcers and wounds, and treat tuberculosis and kidney problems	Al-Badri <i>et al.</i> , 2016; Boeing <i>et al.</i> , 2021
		<i>Ficus palmata</i> Forssk	Inzar	<i>Moraceae</i>	Fruit and sap	Warts, antioxidant activity using free radical scavenging and ferric reducing activities, constipation and diseases of the lungs	Joshi <i>et al.</i> , 2014; Negi <i>et al.</i> , 2018
10487		<i>Justicia adhatoda</i> L.	Bekarh	<i>Acanthaceae</i>	Whole plant	Cough, colds, asthma, to liquefy sputum, as a bronchodilator, bronchial catarrh, bronchitis, and tuberculosis	Eep <i>et al.</i> , 2011; Prabhuji <i>et al.</i> , 2011
10502		<i>Monotheca buxifolia</i> (falc) adc.	Gwargurah	<i>Sapotaceae</i>	Fruit & Wood	Hematinic, laxative, digestive, anthelmintic, antipyretic, and in the treatment of gastro-urinary disorders	Ullah <i>et al.</i> , 2016
10250		<i>Morus lavaegata</i> Wallich	Shahthooth	<i>Moraceae</i>	Fruit	Hypoglycemic, hypotensive and diuretic	Khumukcham <i>et al.</i> , 2016; Rahman <i>et al.</i> , 2022






10503		<i>Morus alba</i> L	Spen thooth	<i>Moraceae</i>	Fruit	Dizziness, insomnia, premature aging, DM2. Atherosclerosis, liver and kidney disorders, and inflammation	Rodrigues <i>et al.</i> , 2019
10499		<i>Mentha longifolia</i> (Linn) Huds	Vilany	<i>Lamiaceae</i>	Leaves	Headache, fever and digestive disorders	Mikaili <i>et al.</i> , 2013; Arijit <i>et al.</i> , 2013
10444		<i>Convolvulus arvensis</i>	Perwatai	<i>Convolvulaceae</i>	Flowers and leaves	Cholagogue, diuretic, laxative, purgative, wounds, fever, menstrual period, constipation and remove dandruff.	Al-Snafi, 2018; Amjad, 2015
MP-AP-10-20-167		<i>Mentha piperita</i>	Podina	<i>Lamiaceae</i>	Leaves and oil	Aromatherapy, bath preparations, mouthwashes, toothpastes, calm pruritus and relieve irritation and inflammation.	Herro & Jacob 2010; Mehra <i>et al.</i> , 2022
CUHA-198		<i>Zanthoxylum armatum</i>	Dambara	<i>Rutaceae</i>	Seeds	Toothache, asthma, gum bleeding, fever, dyspepsia, tonics	Verma <i>et al.</i> , 2021; Paul <i>et al.</i> , 2018






10551		<i>Solanum nigrum</i>	Kachmacho	<i>Solanaceae.</i>	Juice	Pneumonia, aching teeth, stomach ache, tonsillitis, wing worms, pain, inflammation and fever, tumor, inflammation, and also as hepaprotective, diuretic, antipyretic	Kunwar <i>et al.</i> , 2021; Djeussi <i>et al.</i> , 2020
10547		<i>Salvia moorcroftian</i>	Kharghwag	<i>Lamiaceae</i>	Leaves and seedss	Dysentery, haemorrhoids, dressing for wounds, itchy skin, diarrhea, gas trouble, stomach disorders and cough.	Khursheed & Jain, 2021; Haq <i>et al.</i> , 2020
A 200		<i>Acorus calamus</i>	Skhwaja	<i>Araceae</i>	Dried and boiled plant	Anticonvulsant, antispasmodic, cardiovascular, hypolipidemic, immunosuppressive, anti-inflammatory, cryoprotective, antioxidant, antidiarrheal, antimicrobial, anticancer and antidiabetic	Das <i>et al.</i> , 2019; Mohammed <i>et al.</i> , 2018
SMDB 10.077		<i>Mirabilis jalapa</i>	Gule bade	<i>Nyctaginaceae</i>	Leaves and roots	Gastrointestinal disorders, including dysentery, diarrhea, muscle pain and abdominal colic	Liya <i>et al.</i> , 2021; Malakar & Biswas, 2020
10569		<i>Malvaneg lecta</i>	Panerak	<i>Malvaceae</i>	Leaves and flowers	Bruise, inflammations, insect bites etc, or taken internally in the treatment of respiratory system diseases or inflammation of the digestive or urinary systems	Al-Snafi, 2019; Raja <i>et al.</i> , 2020


KF1466		<i>Foeniculum vulgare</i>	Kaga	<i>Apiaceae</i>	Leaves	Galactagogue agent for lactating mothers, increase milk secretion, promote menstruation, colic, indigestion, and symptoms of menopause	Mahboubi, 2019; Pal <i>et al.</i> , 2019; Shahrajabian <i>et al.</i> , 2021
NH-ICUP / 08-24		<i>Nasturtium officinale</i>	Tarmera	<i>Brassicaceae</i>	Leaves	Respiratory system diseases, diabetes, oxidative stress, asthma, and immune deficiency	Yalçinkaya <i>et al.</i> , 2019; Sen & Chakraborty, 2011; Tiwari <i>et al.</i> , 2018
UOL/PDH627A-C		<i>Aloe barbedensis</i>	Kamal panra	<i>Asphodelaceae</i>	Leaves gel	Stimulates fibroblast which produces the collagen and elastin fibers making the skin more elastic and less wrinkled and digestive problems	Lanka, 2018; Thakare, 2020
PMNH-41694		<i>Artemisia indica</i>	Tarkha	<i>Asteraceae</i>	Stem, leaves and juice	Nervous and spasmodic affections, in asthma, diseases of the brain, improving the appetite, diarrhoea, dysentery and abdominal pains.	Al-Snafi, 2018; Buell & Anderson, 2021
99.05, 32.73		<i>Amaranthus viridis</i>	Chalwae	<i>Amaranthaceae</i>	Shoot and leaves	Fever, pain, asthma, diabetes, dysentery, urinary disorders, liver disorders, eye disorders and venereal diseases	Ali <i>et al.</i> , 2020; Rehman <i>et al.</i> , 2020

1405. 1763		<i>Asphodelus tenuifolius</i>	Piayazaky	<i>Liliaceae</i>	Whole plant	Rheumatic pain and inflamed Body parts	Saleem <i>et al.</i> , 2021
10423		<i>Berberis lyceum</i> Royle	Kwarey zyar largay	<i>Baberidaceae</i>	Fruit and roots	Diabetes mellitus, liver disorders, abdominal problems, skin diseases, oral ulcers, kidney, conjunctivitis, piles, leprosy, jaundice, rheumatism	Parra <i>et al.</i> , 2018
10435		<i>Carthamus oxycantha</i> Bieb	Kareza	<i>Astreaceae</i>	Seed	Wound-healing and pain	Dahmani <i>et al.</i> , 2018; Ali <i>et al.</i> , 2020
10443		<i>Citrullus colocynthis</i>	Karkundai	<i>Cucurbitaceae</i>	Fruit	Indigestion, gastroenteritis, and intestinal parasites, diabetes, liver problems, weak bowel movements, and obstruction or paralysis of the intestine	Li <i>et al.</i> , 2021
10448		<i>Cymbopogon Distans</i>	Sargaray	<i>Poaceae</i>	Shoot	Inflammation and coughs	Zhang <i>et al.</i> , 2011

10449		<i>Cynodon dactylon</i> Lin	Kabal	<i>Poaceae</i>	Shoot	Anasarca, cancer, convulsions, cough, cramps, diarrhea, dropsy	Singh <i>et al.</i> , 2021
10451		<i>Dalbegia sissoo</i>	Shawa	<i>Papilionaceae</i>	leaves and flowers	Aphrodisiac, abortifacient, expectorant, anthelmintic and antipyretic. It is used in conditions like emesis, ulcers, leucoderma, dysentery, stomach troubles and skin diseases	Shah <i>et al.</i> , 2010; Bharath <i>et al.</i> , 2013
10456		<i>Dichanthium annulatum</i>	Wakha	<i>Poaceae</i>	Shoot	Dysentery and menorrhagia in animals	Fatima <i>et al.</i> , 2018
10464		<i>Eucalyptus camaldulensis</i>	Lachi	<i>Myrtaceae</i>	Shoot	Cough remedy, expectorant, febrifuge, tonic, astringent, antiseptic, haemostatic and vermifugal properties. In Senegal a leaf decoction sweetened with sugar is used to treat stomach-ache and dysmenorrhoea	Sabo & Knezevic, 2019

10466		<i>Euphorbia helioscopia</i> L.	Mandanu	<i>Euphorbiaceae</i>	Shoot	Edema, phlegm and cough, malaria, dysentery, scab, tuberculous fistula, osteomyelitis, and cancer	Yang <i>et al.</i> , 2021
10479		<i>Heteropogon contortus</i>	Barwaza	<i>Poaceae</i>	Shoot and leaves	Burns, wounds and rheumatism, diuretic, anti-microbial, anti-cancer, anti-inflammatory	Soromessa, 2011; Majeed <i>et al.</i> , 2020
10485		<i>Jasminum officinale</i> Linn	Rambail chambail	<i>Oleaceae</i>	Whole plant	Body pains, toothache, stomach ache, ulcers, hepatitis, pain due to liver scarring (cirrhosis), dysentery, prevent stroke, aphrodisiac, and cancer	Arun <i>et al.</i> , 2016
10406		<i>Ailantus altissima</i>	Lentus	<i>Simaroubaceae</i>	Leaves	Gastrointestinal, respiratory, cardiovascular, neurological, and peripheral disorders	Rahman <i>et al.</i> , 2019
10406		<i>Rumex hastatus</i>	Tarokay	<i>Polygonaceae</i>	Leaves and root	Wounds, bleeding, relieve from suffering of nettle sting, blood pressure, in tonsillitis and sore throat, as flavoring agent, carminative and diuretic anti rheumatic and skin disease	Ahmad <i>et al.</i> , 2015; Ahmad <i>et al.</i> , 2019

10519		<i>Pinus roxburgii</i>	Nakhtar	<i>Pinacea</i>	Wood & Resin	Heal many diseases, including afflictions of the eyes, ears, throat, blood, and skin	Kaushik <i>et al.</i> , 2013
GCBM / M2 / 45		<i>Taraxacum officinale</i>	Ziarh gulay.	<i>Asteraceae.</i>	Leaves and Stem	Hepatoprotective, antioxidant and anticancer activities	Di & Zucchetti, 2021
10518		<i>Periploca aphylla</i>	Barara	<i>Asclepiadaceae</i>	Juice	Stomachic, tonic, antitumor, antiulcer,	Rashid & Khan, 2021
10516		<i>Parthenium hysterophorus</i>	Guayule	<i>Asteraceae</i>	Whole plant	Emedy for skin inflammation, rheumatic pain, diarrhoea, urinary tract infections, dysentery, malaria and neuralgia	Patel, 2011
10.4.136		<i>Limonium cabulicum</i>	Botyarai.	<i>Plumbaginaceae.</i>	Leaves and root	Stomachic	Wali <i>et al.</i> , 2022

10467		<i>Euphorbia hirta</i>	Azugben	<i>Euphorbiaceae</i>	Whole plant	Female disorders, respiratory ailments (cough, coryza, bronchitis, and asthma), worm infestations in children, dysentery, jaundice, pimples, gonorrhoea, digestive problems, and tumor	Kumar <i>et al.</i> , 2010
10497		<i>Melia azadarch</i>	Shandai.	<i>Meliaceae.</i>	Fruit	Cardioprotective, analgesic, anticancerous	Vekariya <i>et al.</i> , 2016
10514		<i>Oxalis corniculata</i>	Tarokay	<i>Oxalidaceae</i>	Leaves	Liver disorders, jaundice, skin diseases, urinary diseases	Mushir <i>et al.</i> , 2015