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Ethnobotanical Plants from Dhanaula Area of District Barnala, Punjab (India)

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ABSTRACT

This study documents ethnobotanical plants from the Dhanaula area of District Barnala, Punjab, India, highlighting their medicinal and economic importance. For information on the ethnomedical usage of plants growing nearby, locals between the ages of 25 and 75 were surveyed. Utilizing multiple taxonomic publications, plants were identified and photographed. Using information from the current study, 20 different plants of both medicinal and potential value were found in the Dhanaula area of District Barnala.

Keywords: Natural Resources; Biodiversity; Ethnobotany; Herbal Medicine; Medicinal Plants; Economic Importance; Traditional knowledge; Folk Knowledge; Therapeutic Purposes; Barnala.

1. Introduction

Natural resources are quickly depleting as a result of unsustainable human activities. Therefore, the key challenges which are faced by human society are the constant change in climate, decline in biodiversity, and reliance on outside resources. Thus for obtaining sustainable growth and development, it is necessary to investigate the indigenous knowledge which have been gained by us from centuries [1]. Indigenous understanding of medicinal plants is valued as a significant source of knowledge for health care around the world [2,3]. Traditional medicinal herbs are now widely used to cure illnesses [4]. Herbal medicine is the practice of using parts of the plant for therapeutic purposes [5]. There have reportedly been over 50,000 flowering plants utilised for therapeutic purposes worldwide [6]. Beside their use in herbal medicine, Ethnomedicinal studies find their use in development of various modern drugs [7]. However, because it is believed that this knowledge is known by the old and the new generation lacks interest in learning it, this folk knowledge is vanishing day by day [8,9]. The dissemination of information about medicinal plants through literature, and other forms of media has a significant influence on their use [10]. Therefore, this study documents ethnobotanical plant species from the Dhanaula area of District Barnala, Punjab, India, highlighting their medicinal and economic importance.

1.1. Study Objectives

- To document indigenous knowledge of medicinal plants.
- To record therapeutic and economic values of plants.
- To promote traditional medicinal knowledge.

2. Methodology

The study was carried out in Dhanaula area of Barnala district of Punjab India through field visits and interactions with locals. In order to collect data, 50 local people including traditional healers, elderly villagers, and farmers were

interviewed for ethnomedicinal uses of plants growing in their vicinity. Data on medicinal plant use were collected mainly through semi-structured interviews conducted in the local language Plant specimens mentioned by the informants were collected, photographed, and later verified with various taxonomic literature [11-14]. Only informed consent was obtained from all participants before recording their knowledge.

3. Results and Discussion

Traditional medicine is an indigenous medicine that is utilized in a different way from allopathic medicine to maintain health and to prevent, diagnose, and treat physical and mental disorders [15]. It is based on theories, beliefs, and personal experiences. Traditional medicine has been practiced for thousands of years and has remained popular all throughout the world. Practitioners have greatly contributed to human health, especially as community-based primary care providers [16]. Besides being so old, due to the lack of official support, Ayurveda (medicinal system) has received less consideration from medical professionals and researchers. The botany, pharmacognosy, chemistry, pharmacology, and biotechnology of herbal medicines are currently the subjects of extensive research. The importance of ethnomedicine has been recognised; research- is being done on plants used in street drugs, domestic treatments, and psychoactive plants [17]. The current study offers important details regarding traditional knowledge of therapeutic plants. As per the data obtained in the current study, 20 different plants species in Dhanaula area of District Barnala were identified with medicinal and economic values (Table 1 & Figure 1).

Table 1. List of plants from Dhanaula area of District Barnala with ethnobotanical uses

S.No.	Botanical Name	Vernacular Name	Family	Plant part used	Uses
1.	*Aegle marmelos*	Bael	Rutaceae	Fruits	Juice of fruits is used to reduce digestive problems, prevent constipation.
2.	*Ocimum sanctum*	Tulsi	Lamiaceae	Leaves	Leaf juice is very effective against cough and cold, throat irritation, reduce fever, improve digestion, used as an ingredient for tea masala.
3.	*Aloe vera*	Kuaar Gandal	Liliaceae	Leaves	Mucilaginous gel in the leaves is used for dry skin, mucilage is added in juice, eaten as vegetable or pickle.
4.	*Azadirachta indica*	Neem	Meliaceae	Leaves and young branches	Stem of young branches is used as tooth brush for cleaning teeth, leaf is used as face mask for reducing pimples, also used by diabetic patients.
5.	*Calotropis procera*	Aak	Asclepiadaceae	Leaves	Used against toothache.

6.	*Kalanchoe pinnata*	Patharchat	Crassulaceae	Leaves	Leaf juice or leaves are used for curing wounds, treating pimples, skin wrinkles, etc.
7.	*Eucalyptus sp.*	Safeda	Myrtaceae	Leaves	Leaves are used in curing mouth ulcers.
8.	*Acacia nilotica*	Kikkar/ babool	Mimosaceae	Fruits	Fruit pods are used as pickle, Gum from plant is utilized for strengthening bones by eating with other food products, Stem of young branches is used as tooth brush for cleaning teeth.
9.	*Syzygium cumini*	Jamun	Myrtaceae	Fruits	Fruits are edible, seed powder is used for reducing sugar in diabetic patients, regulate blood pressure.
10.	*Tinospora cordifolia*	Giloy	Menispermaceae	Stem	Stem is eaten raw or stem decoction used for curing dengue, control blood sugar, improve digestion, immunity booster.
11.	*Terminalia arjuna*	Arjun	Combretaceae	Stem bark	Stem bark is used for reducing blood pressure.
12.	*Ficus benghalensis*	Borrh	Moraceae	Latex	Treatment of wounds, reduce inflammation.
13.	*Vitex negundo*	Samalu	Verbenaceae	Leaves	Leaf juice or paste/ boiled decoction is used is applied to cure joint pain and cuts, also as antipyretic.
14.	*Embellica officinalis*	Amla	Phyllanthaceae	Fruits	Fruits are eaten raw, used in pickle and Jam making, dried fruits are dipped overnight in water and water is used for washing hair, Good for digestive disorders.
15.	*Lawsonia inermis*	Mehndi	Lythraceae	Leaves	Leaf paste is used for dying hairs, leaf paste is used for making beautiful design on hands and feet as auspicious symbol.
16.	*Moringa oleifera*	Suhanjana	Moringaceae	Pods & flowers	Pods are used as vegetable and for making pickles, flowers are also edible.
17.	*Murraya koenigii*	Curry patta	*Rutaceae*	Leaves	Leaves are used to flavor various curries and other delicacies.
18.	*Cassia fistula*	Amaltas	*Fabaceae*	Fruit pods	Fruit pulp is used as laxative.
19.	*Hibiscus rosa-sinensis*	Gurrhal	*Malvaceae*	Flowers	Flowers are used for various hair problem like hair fall, dandruff, etc.
20.	*Carica papaya*	Papita	Caricaceae	Fruits & Leaves	Fruits are edible, leaf powder and leaf decoction/leaf paste is used to boost immunity as well as platelet count.

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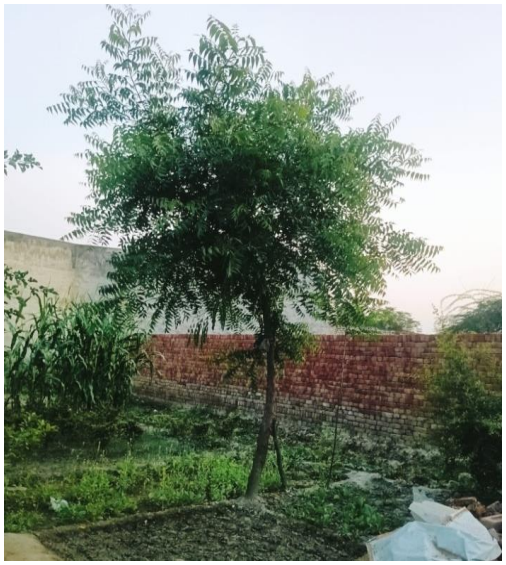
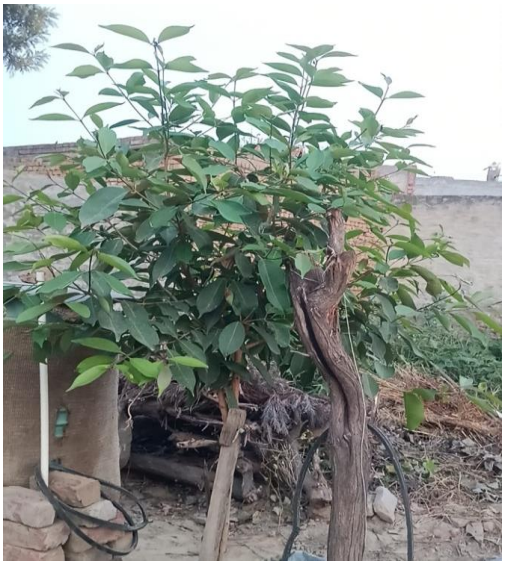


(a)



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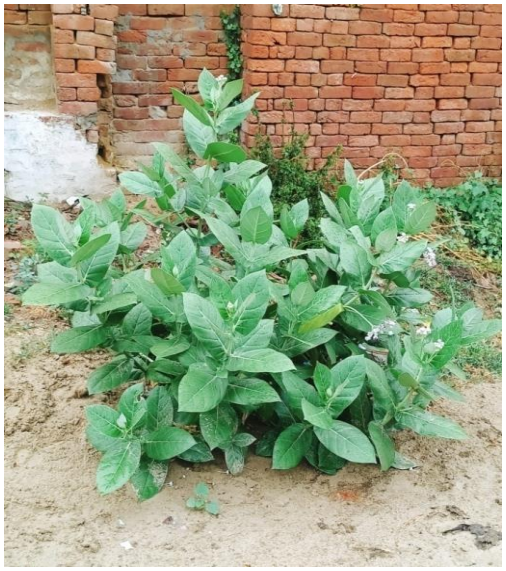

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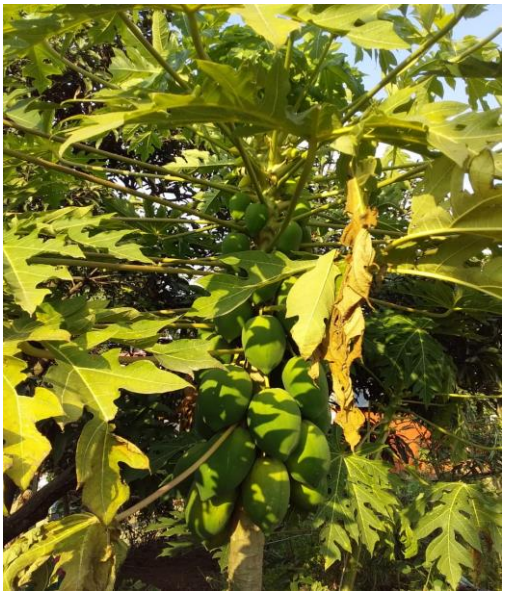

(h)

Figure 1. Photographs of some plants possessing economic and medicinal importance: (a) *Azadirachta indica*, (b) *Syzygium cumini*, (c) *Calotropis procera*, (d) *Acacia nilotica*, (e) *Aegle marmelos*, (f) *Murraya koenigii*, (g) *Vitex negundo*, and (h) *Carica papaya*

4. Conclusions

Local populations still have a wealth of traditional knowledge about plants and their medicinal applications, and the integration of this traditional knowledge with current research may be crucial for the discovery of novel phytotherapeutic agents. Based on this study, some future suggestions are as follows: (1) Further studies are needed to validate the medicinal value of the identified plants, (2) Awareness should be created to pass traditional knowledge to the younger generation, and (3) Conservation of medicinal plants is important for sustainable use.

Declarations

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Competing Interests Statement

The authors have declared that no competing financial, professional, or personal interests exist.

Consent for publication

The authors declare that they consented to the publication of this study.

Authors' contributions

All the authors took part in literature review, analysis, and manuscript writing equally.

Availability of data and materials

Supplementary information is available from the authors upon reasonable request.

Institutional Review Board Statement

Not applicable for this study.

Informed Consent

Informed consent was obtained from all participants before recording their knowledge.

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