Exploration of exotic ethno botanical potential in district Poonch Azad Jammu Kashmir

Sardar Irfan Mehmoood, Nuzhat Shafi, Zeenat Jannat, Shabnum Shahida, Sajid Majeed and Tariq Habib

Abstract
Azad Jammu and Kashmir is a famous natural territory with ecological zones for medicinal and aromatic plants. Especially district Poonch is blessed with wide range of climatic zones from subtropical to alpine zones which provide a home for medicinal herbs. Keeping these facts in mind twelve exotic species (Calendula officinalis L., Cynara scolymus L., Kalanchoe pinnata (Lam.) Pers., Lavendula angustifolia Mill., Mimosa pudica L. Mentha X piperita L., Melissa officinalis L. Origanum majurona L. Rosmarinus officinalis L., Stevia rebaudiana (Bertoni), Solanum maricatum Ait., Thymus vulgaris L. were acquired from (Bio Conservation Institute) NARC Islamabad and were planted in botanical repository at Govt. Boys College Campus. After successful plantation and cultivation different formulations like powder, oil, paste, infusion and extract were prepared from these medicinal plants. To check medicinal value of each species these formulation were distributed to 100 local habitants of Azad Kashmir. These investigations on exotic species in local area were continued during the last four years. These studies revealed that AJK has good adoptability for exotic species. Introduction, adoptability and ethno botanical collaboration of exotic MAPs can be proved beneficial for local peoples for curing basic health problems and for pharmaceutical developments.

Keywords: adaptability, AJK, exotic flora, ethno botany, MAPs

Introduction
Azad Kashmir is situated between 73°28’14 East longitude and 34°22’25 North latitude. India held Kashmir is located towards East, Khyber Pakhtunkhwa in West, Punjab on South and Northern Areas on North. This state is bestowed with different ecological zones with drastic medicinal plant diversity [1]. Usage of medicinal plants in natural and allopathic medicines has tremendously increased during recent years in urban and rural parts of the world [2]. Native people of every region of world widely using plant based medicines providing a roadmap for modern drug developments in pharmaceutical industry [3]. Utilization of medicinal plants to combat different types of diseases can be traced back to human origin on earth [4]. Plants are providing clothing, food, shelter, decoration and treatments of various ailments [5]. About 20% medicinal plants have been explored for medicinal purposes up till now [6]. Domestication of plants for medicinal purposes, cosmetic usage and for forage is evident from human history [7]. Ethno botanists investigate and document information about interaction between human culture and plants. Their main focus was utilization, and management of plants in different societies [8].

In ethno botany taxonomic, morphological and ecological skills were essential to study cultural concepts about different plants [9]. Recent investigation on usage of medicinal plants revealed that about 70% Himalayan population and 75% Pakistani people depend upon medicinal plants to meet their health care requirements [10, 11]. Further it is reported that about 600 plant species are used for medicinal purposes in Pakistan [12].

A major part of population in Pakistan depending upon ethno medicines are restricted to western area due to presence of Himalaya habitating major bulk nearly 8000 of MAPs [13, 14]. The state of Jammu Kashmir is famous for its native and regional flora providing a sustainable home for exotic and indigenous plant species. Small piece of work has been done about exotic flora of state of Jammu Kashmir [15, 16]. Thirty seven genera of indigenous and alien were documented in Kashmir among them thirty seven species have been naturalized. There is gap of investigations on medicinal, ornamental, species in Kashmir [17]. Plant based industries have hedge potential in state of Jammu Kashmir due to its facilitating climato-edaphic environment [18]. Medicinal and ornamental flora in Kashmir flourish well as compare to neighbouring regions of this state [19]. Shifting of plant species from indigenous areas to new areas is part of human
history for plantation purposes \[20\]. Rate of introduction of new species in new regions has increased during recent years due economic values of plants in internationalized and globalized world \[21\]. Recent investigation on exotic flora of Kashmir revealed that it is ideal place for lavender cultivation which is an important medicinal plant and is also part of our study \[22\].

Current research work first time investigates collectively introduction, cultivation, documentation, and ethno botanical usage of exotic medicinal and aromatic plants in Azad Kashmir. Ultimately creating a scientific room for all has stake holders who have deep concern with plant oriented medication.

Materials and Methods

All twelve species of MAPs were acquired from (Bio Conservation Institute) NARC Islamabad and were planted in repository and targeted areas in AJK. Then various types of preparations (diction, paste, oil, extract) were prepared and distributed to 100 local inhabitants. Information on the ethno botanical properties of medicinal plants was collected from 100 local inhabitants and herbalists and all categories using open ended and semi-structured questionnaires during months of August 2014-Jul 2019. Ethno medicinal study was carried out according to \[23\]. Standard ethno botanical methods such as participant involvement, observation and open semi structured interviews were used to gather the information. Plant were identified and herbarium specimens were deposited at Azad Jammu Kashmir Herbarium (AJKMAPH) \[24, 25\]. Labeled field images of plant species were taken according to \[26\] for end users to resolve ambiguous taxonomic identification. The medicinal enumerated alphabetically names along with their respective family.

Results and Discussion

In current study 12 selected exotic species were planted and investigated for medicinal usage. Detail descriptions Botanical names, family, introduced name, origin, habit, part used, medicinal usage was briefly described below (Table 1). Twelve species were cultivated and propagated at College Campus and each plant species showed 100% growth and survival rates were represented in Fig: I and II. Mode of preparations of medicine from each plant was elaborated in Fig: III. Actual native origins of each plant species under study were elaborated in Fig: V.

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Family</th>
<th>Introduced local name</th>
<th>Origin</th>
<th>Habit</th>
<th>Part used</th>
<th>Medicinal usages</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cynara scolymus L.</td>
<td>Asteraceae</td>
<td>Kandara</td>
<td>Mediterranean region</td>
<td>H</td>
<td>L</td>
<td>Hepatoprotective, lowers cholesterol level, anti-diabetic</td>
<td>[27, 28, 29]</td>
</tr>
<tr>
<td>Calendula officinalis L.</td>
<td>Asteraceae</td>
<td>Gulasrafi</td>
<td>Southern Europe</td>
<td>H</td>
<td>F</td>
<td>Antitumor, antispasmodic, Blood purifier, wound healer.</td>
<td>[30, 31, 32]</td>
</tr>
<tr>
<td>Kalanchoe pinnata (Lam.) Pers.</td>
<td>Crassulaceae</td>
<td>Pather Chat</td>
<td>Africa</td>
<td>H</td>
<td>L</td>
<td>Antimicrobial, anti-ulcer, Hepatoprotective kidney stones breaker.</td>
<td>[33, 34, 35]</td>
</tr>
<tr>
<td>Lavender angustifolia Mill.</td>
<td>Lamiaceae</td>
<td>Lavender</td>
<td>Mediterranean region</td>
<td>S</td>
<td>F &amp; L</td>
<td>Antimicrobial, antidepressant, Perfumery.</td>
<td>[22, 46]</td>
</tr>
<tr>
<td>Mimosa pudica L.</td>
<td>Fabaceae</td>
<td>Chi Mui</td>
<td>Tropical America, Australia</td>
<td>H</td>
<td>L &amp; R</td>
<td>Anticonvulsant, arresting bleeding, skin diseases</td>
<td>[38, 39, 40]</td>
</tr>
<tr>
<td>Mentha x piperata</td>
<td>Lamiaceae</td>
<td>Sat Podina</td>
<td>Middle East</td>
<td>H</td>
<td>F &amp; L</td>
<td>Antimicrobial, antioxidant, antiseptic, carminative</td>
<td>[41, 42, 43]</td>
</tr>
<tr>
<td>Melissa officinalis L.</td>
<td>Lamiaceae</td>
<td>Lemon bom</td>
<td>Mediterranean region</td>
<td>H</td>
<td>F &amp; L</td>
<td>sedative, spasmyotic and antibacterial</td>
<td>[44]</td>
</tr>
<tr>
<td>Oreganum majorana L.</td>
<td>Lamiaceae</td>
<td>Walhti kathini</td>
<td>Cyprus</td>
<td>H</td>
<td>F &amp; L</td>
<td>Antibacterial, antioxidant, tranquilizer, sedative</td>
<td>[25, 45, 46]</td>
</tr>
<tr>
<td>Rosmarinus officinalis L.</td>
<td>Lamiaceae</td>
<td>Rosemary</td>
<td>Mediterranean, Spain, France and Palestine</td>
<td>S</td>
<td>F &amp; L</td>
<td>Antimicrobial, treats gout, arthritis, sciatica.</td>
<td>[47, 48]</td>
</tr>
<tr>
<td>Solanum muricatum At.</td>
<td>Solanaceae</td>
<td>Pipo fruit</td>
<td>Andean South America</td>
<td>H</td>
<td>F</td>
<td>Anti-cancer, Diuretic, kidney asher, improves immune system</td>
<td>[49, 50, 51]</td>
</tr>
<tr>
<td>Stevia rebaudiana (Bertoni)</td>
<td>Asteraceae</td>
<td>Methi Buti</td>
<td>Paraguay (South America)</td>
<td>H</td>
<td>L</td>
<td>Antimicrobial, noncarcinogenic, natural Sweetener</td>
<td>[52, 53]</td>
</tr>
<tr>
<td>Thymus vulgaris L.</td>
<td>Lamiaceae</td>
<td>Wali Chikel</td>
<td>Mediterranean Region</td>
<td>H</td>
<td>L</td>
<td>antimicrobial, antioxidant, asthma, sore throat</td>
<td>[25, 54, 55]</td>
</tr>
</tbody>
</table>

Parts used Key: L-Leaves, F-Fruits, R-Root, S-Seed, F-Flower, B-Bark, WP-Whole plant, Rh- Rhizome, T-Tuber and b-.

Habits Key: T-Tree, S-Shrubs, H-Herb and C-Climber.
**Mimosa pudica** L. *Mentha X piperita* L.

**Fig 1:** Cultivation of exotic MAPs in targeted areas of Azad Kashmir.

**Missilia officinalis**, *Origanum majorana*

**Rosmarinus officinalis** *Slevia rebaudiana* Bertoni

**Solanum muricatum** Ait *Thymus vulgaris* L.

Continued Fig I

**Fig II:** Cultivation of exotic MAPs at Govt. College Abbaspur Azad Kashmir.

**Mode of preparation of Medicines from MAPs**

**Fig III:** mode of preparation of medicines

**Native Regions of MAPs**

**Fig IV:** native regions of MAPs under study

**Conclusion**

Usage of local and exotic medicinal flora in District Poonch
has been commonly investigated during recent years. Cultivation of local as well as exotic flora is not in practice in Azad Kashmir. Imported medicinal plant materials are of poor quality facing contaminations. In ordered to bridge these problems present study was conducted. Current investigation of the exotic flora bridges acquiring, cultivation, ethnobotanical documentation useful for sustainable usage of medicinal plants and medicinal plants oriented products in Azad Kashmir. This study is parallel to other countries where plants are cultivated on huge scale for pharmaceutical purposes. Ultimately live plantation and scientific investigations will paved the way for allopathic, herbal and homeopathic systems of medicines and cosmetic industry in local area. This study also open the gate for better management, practical utilization, broad execution concern with future discoursers of exotic medicinal flora in state of Jammu and Kashmir.

References


