Review on Medicinal Plants used by Local Community of Jodhpur District of Thar Desert

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Abstract: The traditional uses of medicinal plants in healthcare practices are providing clues to new areas of research; hence its importance is now well recognized. However, information on the uses of indigenous plants for medicine is not well documented from many rural areas of Rajasthan. Questionnaire surveys, participatory observations and field visits were planned to elicit information on the medicinal plants used by local community of Jodhpur district of Thar desert. The use of 21 plants distributed into 17 families is described. The medicinal plant preparations were applied through different routes of administration like oral, topical or dermal and nasal routes. However, oral application was the highest and most commonly used route of application followed by topical or dermal. Major findings were use of Abrus precatorius for urinary disorders, abortion and contraception; Achyranthes aspera for asthma, cough and gynecological purpose; Acacia catechu as astringent, anti diarrheal, haemostatic and for treatment of skin diseases; Capparis decidua anti diabetic, hypolipidemic, analgesic and anti-inflammatory; Euphorbia caducifolia cutaneous eruption, leucoderma, earache and Ziziphus nummularia as anti diarrheal and anti infective for skin.

Key words: Ethnopharmacology, Ziziphus nummularia, Euphorbia caducifolia, Capparis decidua, Plumbago zeylanica

INTRODUCTION

Out of the total 4,20,000 flowering plants reported from the world (Govarts, 2001) more than 50,000 are used for medicinal purposes (Schippmann et al., 2002). In India, more than 43% of the total flowering plants are reported to be of medicinal importance (Pusapangadan, 1995). Documentation of traditional knowledge especially on the medicinal uses of plants has provided many important drugs of the modern day (Cox and Balick, 1994; Fabriicant and Farnsworth, 2001). Even today this area holds much more hidden treasure, as almost 80% of the human population in developing countries is dependent on plant resources for healthcare (Farnsworth et al., 1985). In country like India, according to reasonable estimates, 70% inhabitants still rely on herbs (Singh and Gautam, 1997). Nation witnesses 2500 species of plants from about 1000 genera which are used by traditional healers (Chandel et al., 1996).

Enormous knowledge on medicinal plants exists as oral among the primitive societies and rural population scattered throughout the India where, a large number of potent medicinal herbs are found growing wild. Although, a great amount of ethnomedical research work has been undertaken in various pockets of tribal country of Rajasthan state by many workers of this field (Singh and Pandey, 1980, 1983, 1996, 1998; Joshi, 1989, 1991, 1993, 1995; Mishra and Kumar, 2000; Trivedi and Narges, 2000; Sharma, 2002b; Trivedi, 2002). However, information on the uses of plants as traditional medicines has not been documented from different sectors of the district. Keeping this in view, the present study was initiated, with an aim to document the knowledge of rural people and folklore on the utilization of medicinal plants in remote areas of Jodhpur district and selection few medicinal plant for photochemical and pharmacological study.

STUDY AREA

Jodhpur is situated at the height between 250-300 meters above sea level and stretches between 26° 18’ to 27° 37’ at North Latitude and between 72° 55’ to 73° 52’ at East Longitude, having geographical area of 22850 sq. kms (Fig. 1). Jodhpur comes under arid zone of western region of Rajasthan, it covers 11.60% of total area of arid zone of the state, extreme of heat in summer and cold in winter is the characteristic of the desert. Jodhpur is no exception. The temperature varies from 49 degree in summer to 1 degree in winter. The rainy days are limited to maximum 15 in a year, average rainfall is 302 mm. Despite

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low and extremely uncertain rainfall, considerable diurnal and seasonal temperature variation, soil deficient in organic matter and nutrients (NPK ratio) soil prone to salinization, shifting sand dunes, it is not devoid of bountiful life supporting systems with abundance of animal and plant species making it a unique biodiversity region in the world.

SURVEY METHOD

In order to document the utilization of indigenous medicinal plants, survey was carried out during the year, 2007-08 in the remote areas of Jodhpur district of the Thar desert. The survey was spread across the seasons so as to get maximum information. The information on medicinal uses of the indigenous plants have been described after gathering informations from general local people, experienced aged rural folk, traditional herbal medicine practitioners and local herbal drug sellers and concluded them by consulting literature. A total of 200 inhabitants were interviewed, randomly selected 132 men and 68 women of different ages from about 35 years and above were interviewed in local language, i.e., Marwari. In addition direct plant observation and identification was done with the help of local healers known as Vaid. A structured questionnaire was used to elicit information from the resource persons using standard methods (Martin, 1995). Information on local name of the plant, plant parts used, preparation method, route of administration, approximate dosage, onset and duration action and possible complication were recorded. Plants collected during the surveys were identified with the help of published regional flora (Bhandari, 1990; Shetty and Singh, 1993; Sharma, 2002a,b) and by comparing voucher specimens with identified herbarium collections in the herbarium. From the collected data a list of plants of different families with their traditional uses, plant part used, their recipes and mode of administration is prepared in alphabetical order of families and name of the plants in a family (Table 1).

USE INDEX

Uses index per species was estimated by calculating the proportion of plants cited and utilized in relation to the total number of interviewees.
<table>
<thead>
<tr>
<th>Plant name</th>
<th>Family name</th>
<th>Habit and Habitat</th>
<th>Part used</th>
<th>Medicinal use</th>
<th>Mode of administration</th>
<th>Uses index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acacia catechu (Kalathus)</td>
<td>Mimosaceae</td>
<td>Its a tree, all part pubescent,</td>
<td>Heart wood</td>
<td>Heart wood extract is used as powerful astringent for urinary, vaginal discharge and in diarrhoea.</td>
<td>Paste made of heartwood applied to inflammations of skin also used as an antiseptic drug.</td>
<td>0.72</td>
</tr>
<tr>
<td>Acacia jamoosae (Gardi babul)</td>
<td>Mimosaceae</td>
<td>Armed shrub or small tree, found</td>
<td>Whole plant</td>
<td>Astringent.</td>
<td>Paste of pod is used in ulcers, swollen gums and dental caries.</td>
<td>0.52</td>
</tr>
<tr>
<td>Adiantum ensifolium (Andijbhar)</td>
<td>Amaranthaceae</td>
<td>Erect hairy herb, abundantly in</td>
<td>Whole plant</td>
<td>Asthmatic and cough.</td>
<td>Seeds decoction is used to treat whooping cough.</td>
<td>0.60</td>
</tr>
<tr>
<td>Agave americana (Bal patra)</td>
<td>Rutaceae</td>
<td>Decidious tree, commonly grows in</td>
<td>Whole plant</td>
<td>Diarrhoea and enteric infections.</td>
<td>Ripe fruit juice prepared with water or milk taken orally as stomachic and anti diarrhoeal and in enteric infections.</td>
<td>0.90</td>
</tr>
<tr>
<td>Aerva lanata (Safed bai)</td>
<td>Amaranthaceae</td>
<td>Under shrub, Commonly found on sand dunes.</td>
<td>Flower</td>
<td>Flower extract is used for treatment of cuts and skin infections.</td>
<td>Flower extract is used for treatment of cuts and skin infections.</td>
<td>0.80</td>
</tr>
<tr>
<td>Allium sativum (Lahai)</td>
<td>Liliaceae</td>
<td>Bulbous herbs, cultivated.</td>
<td>Bulblets</td>
<td>Skin infections.</td>
<td>Bulblets crushed and paste applied to skin infections as antibiotic, bacteriostatic and fungicidal.</td>
<td>0.83</td>
</tr>
<tr>
<td>Argemone mexicana (Sathyamari)</td>
<td>Papaveraceae</td>
<td>Frisky herb, commonly found in</td>
<td>Whole plant</td>
<td>Whooping cough.</td>
<td>Dried flowers crushed and taken with water for treating whooping cough.</td>
<td>0.88</td>
</tr>
<tr>
<td>Asparagus racemosus (Shatavari)</td>
<td>Asparagaceae</td>
<td>Scandent, spinous undershrubs,</td>
<td>Root</td>
<td>Galactagogue and uterine tonic.</td>
<td>Sweets are made with root powder used as galactagogue and uterine tonic after delivery.</td>
<td>0.90</td>
</tr>
<tr>
<td>Barleria prostrata (Bhujadanti)</td>
<td>Acanthaceae</td>
<td>Armed undershrubs, commonly grows</td>
<td>Whole plant</td>
<td>Fever.</td>
<td>Leaf juice is mixed with honey and given to children in fever.</td>
<td>0.56</td>
</tr>
<tr>
<td>Bauhinia racemosa (Thinsa)</td>
<td>Caesalpiniaceae</td>
<td>Small tree with drooping branches, found in hilly tract.</td>
<td>Whole plant</td>
<td>Antiseptic and anti-inflammatory.</td>
<td>Bark exposed of extract is used as anti-inflammatory in skin diseases and ulcers.</td>
<td>0.65</td>
</tr>
<tr>
<td>Calotropis gigantea (Alaka)</td>
<td>Asclepiadaceae</td>
<td>Shrub, grows in wasteland.</td>
<td>Whole plant</td>
<td>Purgative.</td>
<td>Milkly juice used as purgative.</td>
<td>0.75</td>
</tr>
<tr>
<td>Calotropis procera (Alaka)</td>
<td>Asclepiadaceae</td>
<td>Shrub, grows in wasteland.</td>
<td>Whole plant</td>
<td>Skin ailment.</td>
<td>Leaves juice used in external swellings, lupus, tuberous leprosy and thyphilitic ulceration.</td>
<td>0.65</td>
</tr>
<tr>
<td>Capparis decidua</td>
<td>Capparidaceae</td>
<td>Leafless spiny shrubs, found in</td>
<td>Whole plant</td>
<td>Antirheumatic.</td>
<td>Pickle and powder of dry fruits taken orally as an anti rheumatic and hypolipidemic.</td>
<td>0.90</td>
</tr>
<tr>
<td>Plant name (local name in parenthesis)</td>
<td>Family name</td>
<td>Habit and Habitat</td>
<td>Part used</td>
<td>Medicinal use</td>
<td>Mode of administration</td>
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<tr>
<td><em>Euphorbia caducifolia</em> (Dundla-thor)</td>
<td>Euphorbiaceae</td>
<td>Fleshy shrubs; stems armed with spines found on rocky area</td>
<td>Latex of plant</td>
<td>Analgesic and anti-inflammatory.</td>
<td>Charcoal of root is taken orally for rheumatism and bone fracture for analgesic and anti-inflammatory property. Pastes made of aerial part is applied on fracture as an analgesic and anti-inflammatory.</td>
<td>0.75</td>
</tr>
<tr>
<td><em>Gymnema sylvestre</em> (Gurmar)</td>
<td>Asclepiadaceae</td>
<td>It is a shrub, commonly found in dense vegetation.</td>
<td>Whole plant</td>
<td>Anti-diabetic.</td>
<td>Milky latex of plant along with “ghee” applied to cure cutaneous eruption, leukoderma, earache and to expel Gaines worms. Latex also applied for wound healing.</td>
<td>0.57</td>
</tr>
<tr>
<td><em>Ocimum tenuiflorum</em> (Khadulait)</td>
<td>Oculidaceae</td>
<td>Ascending or creeping herb commonly grows in shady places.</td>
<td>Whole plant</td>
<td>Gastrointestinal disturbance</td>
<td>Decoction of leaves is consumed as anti-diabetic. Root powder is taken orally as emetic, expectorant, astringent and stomachic.</td>
<td>0.60</td>
</tr>
<tr>
<td><em>Plumbago zeylanica</em> (Chiranik)</td>
<td>Plumbaginaceae</td>
<td>Erect or sprawling under shrubs, common among bushes in wastelands.</td>
<td>Root</td>
<td>Gastrointestinal disturbance</td>
<td>Plant boiled with butter milk is a home remedy for indigestion, diarrhea, dyspepsia, bloating and dysentery. Leaf paste is applied over forehead to cure headache. Also for its anti-inflammatory, analgesic, antipyretic and antisclerotic activities.</td>
<td>0.65</td>
</tr>
<tr>
<td><em>Salvia malaebarica</em> (Semal)</td>
<td>Labiatae</td>
<td>Deciduous tree, found in hilly tracts.</td>
<td>Whole plant</td>
<td>Antispasmodic and antidiarrhoeal.</td>
<td>Root powder normalizes intestinal flora, stimulates digestive processes, used for dyspepsia. Root paste is applied in order to open abscesses; a paste prepared with milk, vinegar or salt and water, is used externally in leprosy and other obstinate skin diseases. The paste is made by rubbing a piece of root is applied to skin affected.</td>
<td>0.52</td>
</tr>
<tr>
<td><em>Sideroxylon persicum</em> (Pihu)</td>
<td>Salicaceae</td>
<td>Evergreen tree with drooping branches, usually forming compact clumps in wastelands</td>
<td>Whole plant</td>
<td>Carminative, diuretic, lithotriptic and antirheumatic.</td>
<td>Fruits are eaten as carminative, diuretic, lithotriptic and antirheumatic and aromatic. Flowers are stimulant, laxative, applied in painful rheumatic conditions. Seeds oil obtained by compression applied locally on rheumatic swellings</td>
<td>0.62</td>
</tr>
<tr>
<td><em>Ziziphus nummularia</em> (Bordi)</td>
<td>Rhamnaceae</td>
<td>Spiny shrubs, found in wasteland</td>
<td>Whole plant</td>
<td>Cough and asthma</td>
<td>Leaves decoction used for cough and asthma</td>
<td>0.65</td>
</tr>
</tbody>
</table>

**RESULTS AND DISCUSSION**

Phytotery is an art practiced by few elderly people, who are familiar with the sign and symptoms of various common diseases and ill conditions and cure or allay symptomatically these illnesses with the locally available plant drugs. It was observed during the survey of Jodhpur district that these healers now represent a disappearing oral tradition which is not passed on to the next generation, obviously because the younger generation usually consider the belief in plant remedies a sort of superstition and less effective compared to modern medicine. It essential that this valuable knowledge regarding folk medicinal uses of plants be recorded before these time tested uses of herbal drugs are lost forever.

From the collected data a list of 21 plants (Fig. 2) distributed into 17 families with their traditional uses, part used, their recipes and mode of administration is prepared in alphabetical order. Among the major findings use of *Abrus precatorius* for urinary disorders, abortion and contraception; *Achyranthes aspera* for asthma, cough and gynecological purpose; *Acacia catechu* as astringent, anti diarrheal, haemostatic and for treatment of skin diseases; *Capparis decidua* anti diabetic, hypolipidemic, analgesic and anti-inflammatory; *Euphorbia caducifolia* cutaneous eruption, *Leucoderrma Earache* and *Ziziphus nummularia* as anti diarrheal...
and anti-infective for skin. The medicinal plant preparations were applied through different routes of administration like oral, topical or dermal and nasal routes. However, oral application was the highest and most commonly used route of administer followed by topical or dermal application. The formulation like paste is most frequently used followed by powder and decoction (Fig. 3).

Many of the plants that are used by the local people are also used in different medicinal systems such as, the Ayurveda and Unani. For example *Asparagus racemosus* is used by the local people for galactagogue and uterine tonic, Ayurvedic formulations ‘Shatavari Churna’ and ‘Trayodasha guggulu’ are used for same purpose. Similarly *Aegle marmelos* which the local people use for diarrhea and enteric infections, is also used for diarrhea and dysentery in Ayurveda. *Aegle marmelos* is one of key ingredient of ‘Gangadar churna’ and ‘Pushyananga churna’ used for the treatment of diarrhea and dysentery.

*Plumbago zeylanica* (*Chitraka*) is used for gastrointestinal disturbance and wounds healing by tribal people, in Ayurveda formulation like ‘Chitrakadi churna’ and ‘Mahasudarshana churna’ contain *Plumbago zeylanica* as a key ingredients used for same purpose. Phytochemical and pharmacological study has been carried out on plants like *Capparis decidua* (Goyal et al., 2009; Ali et al., 2009), *Plumbago zeylanica* (Sharma et al., 1991), *Calotropis procera* (Hassan et al., 2006; Chavda et al., 2010), *Allium sativum* (Adeyemi et al., 2006) *Gynema sylvestre* (Rachh et al., 2010) and *Aegle marmelos* (Maity et al., 2009).

These medicinal plants are often used for disorders of digestive system followed by skin, respiratory, urinary and gynecological ailments (Fig. 4).

The data recorded during this study were compared with the related study of Kirtikar and Basu (1991), Nadakami (1954), Chopra *et al.* (1956, 1969), Satyavati *et al.* (1976), Agarwal (1986), Jain (1991), Asolkar *et al.* (1992) and also recently published reports on the traditional medicinal uses of the plants (Sebastian and Bhandari, 1984; Shekawat and Anand, 1984; Katewa *et al.*, 2001, 2004, Jain *et al.*, 2005, Muthu *et al.*, 2006). It was found that most of these plants are already known for similar uses. However, their recipes and the method of use in the majority of cases are different also the ingredients added and method of preparation are concerned. Some additional indigenous uses for some of these species have been recorded and given in the Table 1. Further, three unexplored plant are selected namely *Zizyphus nummularia*, *Euphorbia caducifolia* and *Capparis decidua* for the pharmacological studies.
REFERENCES


