DIVERSITY OF MEDICINAL PLANTS IN THE FLORA OF SAUDI ARABIA 3: AN INVENTORY OF 15 PLANT FAMILIES AND THEIR CONSERVATION MANAGEMENT

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Abstract
An inventory of medicinal species diversity in the flora of the Kingdom of Saudi Arabia has been made for 15 angiosperm families, viz., Boraginaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Molluginaceae, Papaveraeae, Portulacaceae, Ranunculaceae, Rhamnaceae, Rutaceae, Tamaricaceae, Tiliaceae, Urticaceae, Verbenaceae and Vitaceae, and 61 species of medicinal plants are recognized. These families are represented in the flora by a total of 393 species of which 15.52% are medicinal. Among the families, the Fabaceae is found to be represented by 23 medicinal species which is highest and 37.70% of the total species. Of these 61 medicinal species, 72.13% exhibits herbaceous life form while remaining 13.11% and 14.75% exhibit shrubs and trees respectively. An enumeration of these medicinal species is presented, each with current nomenclature, Arabic name, English name, medicinal uses, pharmacological properties and status of occurrence in the flora. The communication is aimed at emphasizing the planning and implementation of national conservation strategies for sustainable management of the medicinal plants of the Kingdom of Saudi Arabia.

Key words: Medicinal plant, diversity, inventory, Saudi Arabia
Introduction

The flora of Saudi Arabia is one of the richest biodiversity areas in the Arabian Peninsula having a large number of endemic species. This is due to variation in landform, soil, latitude, longitude and isolation from other geographical regions. The components of the flora are the admixture of the elements from Asia, Africa and Mediterranean region. A total of 2,250 species in 142 families are represented in this flora. Of these, 242 species are endemic and 600 species are rare and endangered (Collenette, 1999; Rahman et al., 2004).

Medicinal plant is a valuable component of the biodiversity. But its complete inventory in the Kingdom has not yet been completed. A family wise survey is in progress to complete the inventory under the auspices of Medicinal, Aromatic and Poisonous Plant Research Center and the Department of Pharmacognosy, College of Pharmacy, King Saud University, Riyadh. In the meantime two inventory reports, one with 7 families and another with 8 families, have already been published (Rahman et al., 2004; Yusuf et al., 2014).

Importance of the study on the Saudi medicinal plants, their folk medicinal uses and inventory for conservation management have been stated in Mosa et al. (1987, 2000) and Rahman et al. (2004).

The present report is the third of the series which deals with 15 families, viz., Boraginaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Molluginaceae, Papaveraeae, Portulacaceae, Ranunculaceae, Rhamnaceae, Rutaceae, Tamaricaceae, Tiliaceae, Urticaceae, Verbenaceae and Vitaceae. These families are represented in the flora of Saudi Arabia by 393 species, individually by 62, 35, 15, 184, 7, 11, 4, 12, 8, 3, 8, 17, 8, 13 and 6 species respectively which is about 17.5% of the total species (Collenette, 1999; Chaudhary, 1999-2001).

In this study importance has given on the identification and inventorying of medicinal plant taxa, documentation of folk medicinal uses, assessment of conservation status and making recommendations for conservation management of threatened taxa.

Material and Methods

The present study was conducted as a part of the analysis of the medicinal plant diversity in the flora and to determine their status in the wild for giving conservation priorities. Only 15 families, viz., Boraginaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Molluginaceae, Papaveraeae, Portulacaceae, Ranunculaceae, Rhamnaceae, Rutaceae, Tamaricaceae, Tiliaceae, Urticaceae, Verbenaceae and Vitaceae were selected for the study.

Literature resources

Relevant floristic literature, such as, Migahid (1996); Collenette (1999); Chaudhary (1999-2001); Al-Jowaid (1999); Rahman et al. (2002a, 2002b) and medicinal literature, such as, Nadkarni (1954); Chopra et al. (1956, 1982), Watt and Gerdina (1962), Kingsbury (1964); Al-Shanwani (1966); Anonymous (1972); Anonymous (1976); Chopra (1977); Dastur (1977); Hikino et al. (1977); Morton (1977); Leucas (1978); Kirtikar and Basu (1981); Smith and Culvenor (1981); Baulos (1983); Ageel et al. (1987a and 1987b); Al-Yahya et al. (1987, 1990);
Mossa et al., (1987, 2000); Asolkar et al. (1992); Muhammad (1992); Shahina and Ghazanfar (1994); Batanouny (1999); Yusuf et al. (2009) were surveyed.

**Herbarium resources**

Herbarium specimens of medicinal plants available in the Herbarium of the College of Pharmacy, King Saud University were studied, where voucher specimens of the medicinal plants collected during last two decades are preserved. The distribution and status of occurrence of the medicinal species of each of these families were assessed through field investigations conducted during the period 2010-2013, survey of preserved herbarium specimens and consultation of relevant literature as mentioned above in literature resources.

An enumeration of these 61 medicinal plants is given in Table 2 along with Arabic names, medicinal properties, folk medicinal uses, distribution and status of occurrence in the flora. Families and species under each family are arranged alphabetically with voucher number.

**Results and discussions**

A total of 393 species are present in the flora under the following 15 families: Boraginaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Molluginaceae, Papaveraaceae, Portulacaceae, Ranunculaceae, Rhamnaceae, Rutaceae, Tamaricaceae, Tiliaceae, Urticaceae, Verbenaceae and Vitaceae. These are distributed by 62, 35, 15, 184, 7, 11, 4, 12, 8, 3, 8, 17, 8, 13, 6 species respectively (Table 1). Among the families, the Fabaceae is the dominant, represented in the flora by 184 species of which 23 (12.5%) are medicinal. On the other hand, the highest rate of medicinal species diversity within the family is found to be 66.6% in the Rutaceae.

It is observed that about 15.52% of the species are medicinal (Table 1) which is less than the first report 33.86% (Rahman et al., 2004) but higher than the second report 13.8% (Yusuf et al., 2014). It is, therefore, found from the results of these three reports that the 30 families are represented in the flora of Saudi Arabia by a total of 1241 species of which 229 (18.45%) are medicinal.

The study showed that these species are widely used by the local people and herbalists for the treatment of 110 ailments (Table 2). The study also revealed that the life forms of these species were distributed to herbs, shrubs and trees by 44, 8, 9 species, respectively (Table 1).

**Table 1: Status of the medicinal plants in the selected families from the Flora of Saudi Arabia**

<table>
<thead>
<tr>
<th>Family</th>
<th>Total sp.</th>
<th>Medicinal species</th>
<th>% of Med. Species</th>
<th>Rare &amp; Endangered</th>
<th>Herbs</th>
<th>Shrubs/undershrub</th>
<th>Trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boraginaceae</td>
<td>62</td>
<td>6</td>
<td>9.67</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Convolvulaceae</td>
<td>35</td>
<td>3</td>
<td>8.57</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cucurbitaceae</td>
<td>15</td>
<td>5</td>
<td>33.33</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Medicinal plants status, as shown in Table 1 and 2, revealed that 5 species are threatened in the wild. Emphasis has been given on these species for setting up conservation priorities for sustainable management of the medicinal plants of the Saudi flora.

It has been identified that lack of trained taxonomists and conservationists, lack of sufficient data and high risk of conducting field investigations in the desert and stony mountains are the major problems which cause a slow progress of inventory. Inventory project for the production of Red Data Book as of IUCN recommendations (IUCN, 2001) has not been taken yet for the flora of Saudi Arabia.

Priority should be given for complete inventory of rare and threatened medicinal plants and its inclusion in the national policy, along with the documentation of folk medicinal uses through different development projects. Medicinal Plant Conservation Strategy is to be framed and implemented for sustainable management and use of folk medicinal knowledge.

The study has been carried out under a project of inventory of Saudi medicinal plants with documentation of folk medicinal uses, and it is the third report of the series which identifies the threatened medicinal taxa for setting up of Medicinal plant Conservation Strategies in Saudi national policies. It confirms the previous results (Rahman et al., 2004; Yusuf et al., 2014) and provides valuable data for production of Red Data Book of flowering plants of Saudi Arabia following IUCN criteria (IUCN, 2001).

**Conclusion**

Indigenous knowledge of medicinal plants is ancient in Saudi Arabia and still exists among the tribal and village peoples and traditional practitioners. A great number of medicinal plant species present in the flora of Saudi Arabia, which is expected to be more than 1200 (over 50%) of the flora (Mossa et al., 2000). It is known from the previous reports (Rahman et al., 2004; Yusuf et al., 2014) that about 24% plants are medicinal in 15 families of which 30.1% are rare or threatened. Including the present report, medicinal species diversity in the flora is found to be 18.45%. Documentation of this medicinal knowledge is meager and the inventory of rare

<table>
<thead>
<tr>
<th>Fabaceae</th>
<th>184</th>
<th>23</th>
<th>12.5</th>
<th>3</th>
<th>11</th>
<th>6</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molluginaceae</td>
<td>7</td>
<td>3</td>
<td>42.85</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Papavariaceae</td>
<td>11</td>
<td>2</td>
<td>18.18</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Portulacaceae</td>
<td>4</td>
<td>2</td>
<td>50</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td>12</td>
<td>2</td>
<td>16.66</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rhamnaceae</td>
<td>8</td>
<td>2</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Rutaceae</td>
<td>3</td>
<td>2</td>
<td>66.66</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Tamaricaceae</td>
<td>8</td>
<td>2</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tiliaceae</td>
<td>17</td>
<td>3</td>
<td>17.64</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Urticaceae</td>
<td>8</td>
<td>2</td>
<td>25</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Verbenaceae</td>
<td>13</td>
<td>2</td>
<td>15.38</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vitaceae</td>
<td>6</td>
<td>2</td>
<td>33.33</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>393</td>
<td>61</td>
<td>15.52</td>
<td>5</td>
<td>44</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>
and threatened plants for Red Data Book of Saudi Arabia has not been made yet. This valuable knowledge is depleting at a faster rate with the advancement of civilization and easy availability of modern medicine and more and more medicinal plants are disappearing from the flora. It is therefore, needed to give priorities on the documentation of the indigenous knowledge and conservation of the medicinal plants in both in-situ and ex-situ condition through national conservation strategy before disappearance of vulnerable species. The present study gives emphasis on conducting further research on the flora of Saudi Arabia for the identification and inventorying of medicinal as well as threatened plants and documentation of folk medicinal uses for taking appropriate conservation measures.

**References**
Table 2. Enumeration of Saudi medicinal species diversity in 15 plant families

<table>
<thead>
<tr>
<th>Medicinal taxa: Arabic names</th>
<th>Pharmacological Properties with plant parts &amp; references</th>
<th>Folk medicinal uses with references</th>
<th>Status of occurrence; Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Boraginaceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Convolvulaceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Cucurbitaceae</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4. Fabaceae</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Leguminosae</td>
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<tr>
<td>6. Pustulaceae</td>
<td></td>
<td></td>
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<tr>
<td>7. Sapindaceae</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Crotalesia retusa</td>
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</tr>
</tbody>
</table>

For plant parts: R= root, St= stem, Br=branch, L= leaf, (TL)=tender leaves, Fl= flower, Bk=bark, Fr= fruit, S= seed, Sh= shoot, Ts= tender shoot, WP= whole plant, O= oil, SO= seed oil, LO= leaf oil, G= gum, Exd= exudates, Lt= latex, W= wood, P= petal, CLt= capsule latex.
9. *Hematoxylin campechianum* L. Tree  
Baqam Asaad  
Decoction is astringent, tonic & anti-inflammatory (W) [Chopra et al., 1956; Chopra, 1977; Hilmo et al., 1977]. Used in chronic diarrhea, dyspepsia & leucorrhoea (W) [Chopra et al., 1956; Chopra, 1977; Hilmo et al., 1977]. Eastern Najd & eastern region (Cult, rare).

10. *Indigofera spinosa* Forssk. Shrublet; 15794 (HCP)  
Qital Hil, Qatar  

11. *Medicago sativa* L. Herb; 15784 (HCP)  
Bassem  
Diuretic (L,S); abortifacient (S) [Watt and Gerdi, 1962; Leucas, 1978]. Used as digestive, appetizer, for peptic ulcer, inflammation of the stomach lining (WP). Cause Lathyrismin Horse & death in poultry (S) [Watt and Gerdi, 1962; Leucas, 1978]. Cultivated fodder (common).

12. *Melilotus albus* Medik. Herb; 12785 (HCP)  
Atrah  

13. *Melilotus indicus* (L.) All. Herb; 13124 (HCP)  
Handaqaoq  
Discourtest, emollient & stimulant (WP) [Watt and Gerdi, 1962; Chopra et al., 1956]. Used in swellings (WP); bowel complaints & indigestion diarrhea (S) [Watt and Gerdi, 1962; Chopra et al., 1956]. Southern mountains & eastern region (common).

14. *Prosopis cineraria* L. Druce. Tree  
Oul  
Astringent (Fr) [Nadkarni, 1954; Chopra et al., 1956]. Used for rheumatism & Scorpio sting (Br); against miscarriage (Fr) [Nadkarni, 1954; Chopra et al., 1956]. Northern & Eastern region (cult. rare).

15. *Psoralea plicata* Del. Herb; 10796 (HCP)  
Shagrala Na’an  
Used for respiratory & intestinal ailments (L); gastric ulcers (Fr) [Boulos, 1983]. Eastern region & South Hijaz (common).

16. *Retama raetam* (Forssk.) Webb. & Berthel. Shrub; 15827 (HCP)  
Ratam  
Febrifuge, emetic, purgative, vermifuge, abortive (Br) [Batanouny, 1999]. Used for wound & making eye wash (Br); for diarrhea (R) [Batanouny, 1999]. Northern areas (common).

17. *Rhyzosia minima* (L.) DC. Vine; 11182 (HCP)  
Babil  
Abortifacient (L) [Chopra et al., 1956]. Rhizosia (Fr) [Batanouny, 1999]. Southwestern region (common).

5. *Mollugoaceae*  

1. *Glinus lotoides* L. Herb; 15567 (HCN)  
Em-Toda, Ghoiba  
Purgative & tonic (WP) [Chopra et al., 1956]. Used in diarrhea, boils, bilious attacks, wounds & pains in the limbs (WP) [Chopra et al., 1956]. Widespread in damp slightly saline soil (common).

2. *Mollugo cerviniana* (L.) Seringe Herb, 15647 (HCN)  
Mollugo  
Stomachic, aperients, uterine stimulant, antiseptic & febrifuge (WP) [Nadkarni, 1954]. Promotes local disinfectant (WP); used in gouty & rheumatic complaints (R); in fever (Fr,Tsh) [Nadkarni, 1954]. Scattered localities in the south (common).

6. *Papavaceae*  

1. *Argemone mexicana* L. Herb; 12843 (HCN)  
Kalkool  
Leaves auleterus, antipemic, depurant & antiprecipit (L). Tonic, febrifuge, diuretic & mild purgative (S) [Yussuf, 2009]. Leaves used for cough, hiccup, asthma, fever (L); for fever, ringworms, dropy, neuralgia (R) [Yussuf et al., 2009]. Southern region (fairly rare).

2. *Tephrosia purpurea* (L.) Pers. Herb; 14283 (HCN)  
Labaseya  
Tonic, laxative, deobstant, diuretic, anthelmintic, antipyretic (WP); diaphoretic, diuretic (R) [Dastur, 1977]. Used in bronchitis, gonorrea, asthma, tumors, ulcers, piles, diseases of heart, spleen & liver (WP); dyspepsia, chronic diarrhea, bronchitis, asthma, boils & pimples (R); seed in eczema (O) [Dastur, 1977]. South & western region (common).

3. *Trigonella foenum-graceum* L. Herb; 13178 (HCN)  
Halba  
Demulcent, diuretic, tonic, carminative, emmenagogue, astringent, emollient & aphrodiasiac (S); cooling & mild aperients (L) [Watt and Gerdi, 1962]. Used for smallpox, dysentery [Watt & Gerdi, 1962]; irritation of the bladder, gas & inflammation of the stomach & intestine(S) [Leucas, 1978]. Cultivated & escape (rare).

7. *Portulacaceae*  

1. *Portulaca oleracea* L. Herb; 12704 (HCP)  
Rijla, Baqla  
Diuretic, refrigerant, astringent & alterative (WP); demulcent, mild astringent, & diuretic (S) [Dastur, 1977]. Useful in scurvy, liver complaints, haemoptysis, dysuria, burns, skin diseases, diseases of the bladder, kidney & lungs [Dastur, 1977]. Southern region (common).

2. *Portulaca quadrifida* L. Herb; 10893 (HCP)  
Mottah  
Antiseptic (WP); vermifuge (S) [Chopra et al., 1956; Chopra, 1977]. Used in skin diseases, diseases of the bladder, kidney & lungs, erysipelas & dysuria (WP) [Chopra et al., 1956; Chopra, 1977]. Southern region (common).

8. *Ranunculaceae*  

1. *Adonis denticula* Del. Herb;  
Zaghlil, Nab-el-gamil, Oudenes  

2. *Nigella sativa* L. Herb; 12952 (HCP)  
Habbatal Barka, Habbatal Sooda  
Digestive, stimulant, carminative, diuretic, anti-inflammatory & mucous (S) [Nadkarni, 1954]. Cultivated in North Hijaz (common).

9. *Rhamnaceae*  

1. *Ziziphus nummularia* Lam. Tree;15947 (HCP)  
Sidr  
Astringent, anthidiomorphic, amythemic, stomachic, demulant & demulcent (L). Febrifuge, laxative & emollient (Fr) [Boulos, 1983]. Used for scabies & boils (S); for bilious affections (Fr); for joint pain, sore throat & bleeding gum (Bk) [Shah, 1990]. Northern region (common).

2. *Ziziphus spinosa* (L.) Willd. Tree;14996 (HCP)  
Sidr, Nabq  
Astringent, antidiomorphic, amythemic, stomachic, demulant & demulcent (L). Febrifuge, laxative & emollient (Fr) [Boulos, 1983]. Used for abscesses, furuncles, tooth aches, sores, wounds & skin diseases (L); used for measles, bronchitis, cough & tuberculosis (Fr); used for Northern region (common).
<table>
<thead>
<tr>
<th>10. Rutaceae</th>
<th></th>
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<table>
<thead>
<tr>
<th>11. Tamaricaceae</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Tamarix aphylla</em> (L.) Karst.</td>
<td>Athel</td>
<td>Bitter, astringent &amp; tonic (Bk) [Nadkarni, 1954].</td>
<td>Used for eczema capitis (Bk) [Nadkarni, 1954].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Tiliaceae</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Corchorus olitorius</em> L.</td>
<td>Malukhia</td>
<td>Demulcent, febrifuge, diuretic &amp; tonic (L.); purgative (S) [Watt and Gerdina, 1962; Chopra et al., 1956].</td>
<td>Used in chronic cystitis, gonorrhea &amp; dysuria; as a galactagogue in abdominal diseases (L) [Watt and Gerdina, 1962; Chopra et al., 1956].</td>
</tr>
<tr>
<td>2. <em>Corchorus trilocularis</em> L.</td>
<td>Malukhia</td>
<td>Demulcent (WP) [Chopra et al., 1956].</td>
<td>Used in fever &amp; obstruction of the abdominal viscera (S) [Chopra et al., 1956].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. Urticaceae</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Urtica pilulifera</em> L.</td>
<td>Hareeq</td>
<td>Diuretic &amp; deparative (WP); diuretic &amp; aphrodisiac (S) [Batanouny, 1999].</td>
<td>Used for rheumatism, sore joints, hemorrhage (WP); for renal stones &amp; inflammation of the bladder (S) [Batanouny, 1999].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. Verbenaceae</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Phyla nodiflora</em> (L.) Greene</td>
<td>Nomos, Plekha</td>
<td>Diuretic, stomachic, astringent to the bowels &amp; mucin for boils (WP) [Yusuf et al., 2009].</td>
<td>Good for ulcers, wounds, asthma, bronchitis, knee-joint pain &amp; indigestion (WP) [Yusuf et al., 2009].</td>
</tr>
<tr>
<td>2. <em>Verbena officinalis</em> L.</td>
<td>Rajal alhamam</td>
<td>Tonic, febrifuge, deparative, aphrodisiac &amp; rubefacient (WP) [Watt and Gerdina, 1962; Chopra et al., 1956].</td>
<td>Used in fever, anemia, dropsy, amenorrhoea, rheumatism, pleurisy, scrofula, diseases of the joints &amp; nerve (WP) [Watt and Gerdina, 1962; Chopra et al., 1956].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15. Vitaceae</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cissus quadrangularis</em> L.</td>
<td>Salah</td>
<td>Laxative, stomachic, tonic &amp; analgesic (St) [Yusuf et al., 2009]; powerful alterative (L. Sh) [Watt and Gerdina, 1962].</td>
<td>Stem used in piles, tumours, loss of appetite, constipation, otorrhoea, epistaxis, scurvy, asthma &amp; as a plaster for broken limbs (St) [Yusuf et al., 2009].</td>
</tr>
<tr>
<td>2. <em>Cissus rotundifolia</em> (Forsk.) Vahl</td>
<td>Halqa</td>
<td>Used for muscular rheumatism, earache (R) [Watt and Gerdina, 1962]; for wounds &amp; ulcers (WP).</td>
<td>Used for muscular rheumatism &amp; earache (R) [Watt and Gerdina, 1962]; for wounds &amp; ulcers (WP).</td>
</tr>
</tbody>
</table>