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## COMPREHENSIVE REVIEW OF PARSIYOSHAN (*ADIANTUM CAPPILIS-VENERIS* LINN.) FROM TRADITIONAL MEDICINE TO SCIENTIFIC OVERVIEW

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### ABSTRACT

Parsiyoshan (Maidenhair) is a graceful delicate fern with worldwide distribution. It (*Adiantum cappilis-veneris* L.) belongs to the family Polypodiaceae. In Sanskrit, it is named as Hansapadi. The word Hansapadi is derived from Hansa, which means geese, and padi, the foot. The segments of the leaves resemble feet of geese. It has been in use for centuries in Unani medicine as anti-inflammatory, demulcent, hair tonic, diuretic, expectorant, emmenagogue, etc. due to its varied chemical composition. *Adiantum cappilis-veneris* L. holds a rich source of secondary metabolites including alkaloids, triterpenes, flavonoids, phenylpropanoids, carotenoids, etc. In this review, an attempt has been made to explain the morphology, phytochemistry, pharmacological actions and uses, reported ethnobotanical studies for exploring the medicinal properties of Parsiyoshan.

## INTRODUCTION

Parsiyoshan (*Adiantum cappilis-veneris* L.) belongs to the family Polypodiaceae. It grows 15-30 cm in height; its fronds arise in clusters from creeping rhizomes 20-70 cm tall, subdivided into pinna 5-10 cm long and broad. In Sanskrit, it is named as Hansapadi. The word Hansapadi is derived from *Hansa*, which means geese, and *Padi*, the foot. The segments of the leaves resemble feet of geese<sup>1,2</sup>.

Parsiyoshan (Maidenhair) is a graceful delicate fern with worldwide distribution. It is extensively found as a terrestrial fern throughout the hills in India in moist shady places especially on damp old walls and crevices of rocks. It is generally popular as garden herb and indoor house plant<sup>3</sup>. The fern is chiefly found in the Western Himalayas. It requires a moist soil for its propagation. It has been in use for centuries in Unani Medicine as anti-inflammatory, demulcent, hair tonic, diuretic, expectorant, emmenagogue, etc.<sup>1,4,5,6</sup>.

### Chemical constituents

Chemical analysis of Parsiyoshan reveals an array of compounds including triterpenes, flavonoids, phenylpropanoids and carotenoids. Adiantone, adiantoxide, astragalin, beta-sitosterol, caffeic acids, caffeylgalactose, caffeylglucose, campesterol, carotenes, coumaric acids, coumarylglucoses, diplopterol, epoxyfilicane, fernadiene, fernene, filicanes, hopanone, hydroxyl-adiantone, hydroxyl-cinnamic acid, isoadiantone, isoquercetin, kaempferols, lutein, mutatoxanthin, naringin, neoxanthin, nicotiflorin, oleananes, populnin, procyanidin, prodelpinidin, quercetins, querciturone, quinic acid, rhodoxanthin, rutin, shikimic acid, violaxanthin and zeaxanthin are chemicals found in Parsiyoshan. It also contains a volatile oil, bitter principle (capillerin), tanning material, mucin, gallic acid and sugars<sup>3,4,7-12</sup>.

### Parts used

The dried fronds of Parsiyoshan are used as a drug as well as the dried herb with rhizome and roots<sup>1,3,7,11,13,14</sup>.

### Cultivation

Parsiyoshan requires abundant moisture in the air and in the soil, though the soil should be well drained<sup>15</sup>. The plant prefers neutral and basic (alkaline) soils. The plant likes a position with plenty of light but dislikes full sun. It prefers a sheltered shady position. The seeds of this plant ripen from May to September<sup>16</sup>.

### Temperament (*Mizaj*)

According to the most of the Unani scholars' opinion about the temperament of this herb is hot & dry<sup>4-6,13,17</sup>.

**Pharmacological actions mentioned in Unani classics**

Expectorant<sup>21 - 23</sup>  
Purgative<sup>24</sup>  
Astringent to bowels<sup>4, 6</sup>  
Emetic<sup>5</sup>  
Laxative<sup>4</sup>  
Diuretic<sup>6, 13, 25</sup>  
Emmenagogue<sup>4 - 6, 13, 21</sup>  
Anti-pyretic<sup>4, 21, 22</sup>  
Hair Tonic<sup>5</sup>  
Skin cleanser<sup>13, 22, 26</sup>  
Deobstruent<sup>4, 5, 13, 23, 27</sup>  
Anti-inflammatory<sup>4 - 6, 13, 23, 27</sup>  
Desiccant<sup>5, 24</sup>  
Demulcent<sup>4 - 6, 13, 25</sup>  
Concoctive<sup>13, 25</sup>  
Tonic<sup>4, 26</sup>  
Antidote<sup>4, 5</sup>

**Pharmacological actions according to ethno- botanical references**

Expectorant<sup>1, 7, 14, 18 - 20</sup>  
Anti-tussive<sup>28</sup>  
Anti-asthmatic<sup>29</sup>  
Purgative<sup>3, 20</sup>  
Astringent to bowels<sup>7</sup>  
Emetic<sup>30 - 32</sup>  
Laxative<sup>33</sup>  
Anti-helminthic<sup>30, 34</sup>  
Diuretic<sup>1, 2, 15, 35</sup>  
Emmenagogue<sup>1 - 3, 11, 14, 35, 36</sup>  
Aphrodisiac<sup>14, 31</sup>  
Abortifacient<sup>10</sup>  
Hypoglycemic<sup>3, 37, 38</sup>  
Hypotensive<sup>39, 40</sup>

Anti-fungal<sup>20, 29, 41</sup>

Anti-pyretic<sup>1, 3, 14, 41</sup>

Astringent<sup>18, 34</sup>

Emolient<sup>3, 20</sup>

Hair Tonic<sup>3</sup>

Deobstruent<sup>2</sup>

Anti-inflammatory<sup>3, 10</sup>

Demulcent<sup>2, 20</sup>

Concoctive<sup>29, 32</sup>

Tonic<sup>3, 10, 34</sup>

Resolvent<sup>2</sup>

Antidote<sup>14</sup>

#### **Therapeutic Uses mentioned in Unani classics**

Alopecia areata<sup>4 - 6, 13, 15</sup>

Bronchial Asthma<sup>4, 5, 13, 25</sup>

Pneumonia<sup>4</sup>

Pleurisy<sup>25</sup>

Jaundice<sup>4 - 6</sup>

Renal colic<sup>4</sup>

Dysuria<sup>4</sup>

Headache<sup>4</sup>

Cough<sup>4, 6, 13</sup>

Whooping cough<sup>4</sup>

Vesicular calculi<sup>4</sup>

Stomatitis<sup>13</sup>

Common cold<sup>4, 5, 13</sup>

Atony<sup>13</sup>

Fever<sup>4, 13, 21</sup>

Paralysis<sup>13</sup>

Boil<sup>4</sup>

#### **Therapeutic Uses according to ethno botanical reference**

Alopecia areata<sup>42</sup>

Bronchial Asthma<sup>15</sup>

Visceral tumours <sup>3, 10</sup>

Pleurisy <sup>15</sup>

Jaundice <sup>15, 42, 43</sup>

Renal colic <sup>42</sup>

Dysuria <sup>42</sup>

Rheumatism <sup>29, 42</sup>

Cough <sup>1, 11, 14, 15, 41, 42</sup>

Whooping cough <sup>11</sup>

Splenic tumours <sup>3, 10</sup>

Liver tumours <sup>3</sup>

Common cold <sup>3, 14, 15</sup>

Itching <sup>2</sup>

Fever <sup>1</sup>

Heartburn <sup>29, 42</sup>

Menorrhagia <sup>11</sup>

Dysphagia <sup>14</sup>

Dysmenorrhoea <sup>11</sup>

## EXPERIMENTAL / CLINICAL STUDIES

### Anti-Inflammatory and anti-nociceptive (analgesic) activity

Ethanol extract of *Adiantum cappilis-veneris* L. and its various fractions (ethyl acetate) showed significant anti-inflammatory and analgesic activity due to inhibition of NO release and the decrease of TNF- $\alpha$  level with respect to control <sup>44</sup>.

### Hypoglycaemic activity

Ethanol extract of *Adiantum cappilis-veneris* L. was tested for hypoglycaemic activity in mice and it showed significant anti-hyperglycaemic activity <sup>45</sup>.

### Anti-microbial / antibacterial activity

Methanolic extract of *Adiantum cappilis-veneris* L. exhibited significant anti-microbial activity due to the phenolic content present in it <sup>46, 47</sup>. Another study showed antibacterial activity of aqueous and alcoholic extract of leaves of *Adiantum cappilis-veneris in-vitro* <sup>48</sup>.

### Anti-Oxidant activity

The leaf extract of *Adiantum cappilis-veneris* L. prepared in 59% alcohol exhibited anti-oxidant activity by inhibiting lipid peroxidation and enhancing the activity of anti-oxidant enzymes and glutathione content <sup>49</sup>.

**Anti-implantation activity**

Different extracts of *Adiantum cappilis-veneris* L. were screened on different groups of female albino rats by intraperitoneal route. The petroleum ether extract of *Adiantum cappilis-veneris* showed significant anti-implantation activity (83%) at a dose level of 100mg/kg dry extract. The alcoholic extract showed a slight activity, but was found to be toxic<sup>50</sup>.

**Anti-fungal activity**

The crude extract and extracted phenols of *Adiantum cappilis-veneris* L. showed anti-fungal activity<sup>51</sup>.

**Anti-Vitiligo activity**

It has been found that *Adiantum cappilis-veneris* L. exhibited anti-vitiligo activity<sup>52</sup>.

**Diuretic activity**

Alcoholic extract of *Adiantum cappilis-veneris* L. showed diuretic response when administered orally or intraperitoneally to rats, mice and guinea pigs<sup>53</sup>.

**Therapeutic Dose**

In Unani literature, the therapeutic dose for Parsiyoshan mentioned by Unani physicians

5-7 g<sup>13</sup>

3-6 g<sup>5</sup>

**Formulations (Murakkabat)**

Parsiyaoshan is an ingredient of the following Unani compound preparations

Matbookh-e-Bukhar<sup>13, 22</sup>

Lauq-e-Sapistan<sup>13, 22</sup>

Sharbat-e- Mudir Tams<sup>13, 22</sup>

Arq-e- Parsiyoshan<sup>54</sup>

**CONCLUSION**

Parsiyaoshan (Maidenhair) - *Adiantum cappilis-veneris* Linn. is a very useful herb and it has been used by traditional practitioners for its vital healing properties especially in Unani system of medicine. Several bioactive ingredients were isolated and identified which responsible for its anti inflammatory, anti asthmatic, demulcent, diuretic, expectorant, emmenagogue activities. In modern pharmacology, the major active constituents including triterpenes, flavonoids, phenylpropanoids and carotenoids plays an important role in curing various diseases and inflammatory conditions.

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