Twelve vegetables used for prevention and treatment of hemorrhoids in Persian Medicine

Pouran Andarkhor, Mahmoud Khodadoost, Mohammad Kamalinejad, Ramin Talaie, Latif Gachkar, Arman Zargaran

OBJECTIVE: To review the role of vegetables to prevent and treat hemorrhoids in Persian Medicine (PM).

METHODS: We search main Persian Medicine manuscripts, including the books of Liber Continens, Canon of Medicine, Great Elixir, Akbarie's Medicine, Storehouse of Medicaments and Present for the faithful. Also, it was considered by searching in reference books and published papers with the help of PubMed, Scopus, Google scholar databases.

RESULTS: Twelve vegetables, relating to 8 plant families, have been found in PM that their effectiveness involved in laxative, anti-inflammation, antimicrobial, analgesic and wound healing.

CONCLUSION: Our findings suggest that 12 Persian Medicine vegetables can be used to prevent and treat hemorrhoids.

INTRODUCTION

Hemorrhoidal disease as enlargement and displacement of normal cushions in rectum is one of the most common diseases of gastrointestinal tract worldwide and divided in two types, internal and external. In general population, the prevalence of hemorrhoids is at least 4/4% in the society, but a colorectal cancer screening shows the prevalence of 38.93% among the people participated in a health care program in Austria. Although, often the cause of hemorrhoids is unknown many factors can cause hemorrhoids which include irregular bowel habits (constipation or diarrhea), exercise, gravity, nutritional regimen including low fiber diet, spicy foods and alcohol intake, increased intra-abdominal pressure (prolonged straining), pregnancy, obesity, prolonged sitting time, genetics, depressive mood, absence of valves within the hemorrhoidal veins, and aging. Deformity and dilatation of hemorrhoids vascular with changes in connective tissue which support the cushions is an important finding in hemorrhoidal disease. Sometimes inflammation and hyperplasia has been seen in hemorrhoids histology. Patients with hemorrhoids usually suffer from discomfort, bleeding, swelling, pain, pruritus and discharge.
The most common complaint is bleeding. Management strategies of hemorrhoids depend on the stage of disease. In the low grades, conservative management is recommended including high-fiber diets or supplements, topical analgesics, warm sitz baths, laxatives and sclerotherapy; but in higher grades, invasive methods like banding and hemorrhoidectomy are recommended. However, they are not complete satisfaction in current medications for treatment of hemorrhoids; and hemorrhoids would be recurrent after treatment in many cases. In addition, there are many complications after surgeries such as infection, urinary retention, fibrosis, stenosis, fecal incontinence and ectropion. Therefore, prevention of hemorrhoids or finding new approaches and medicines to treat or control of this disorder is welcomed. Regarding to such approach; traditional and complementary medicines are always used as a new source for finding new treatments usually based on old knowledge. Persian Medicine (PM) is one of traditional systems of medicines which has a long root in the history (about 7000 years) and was the main medical paradigm in Europe and west Asia until 17th century AD. Some of Persian Medicine books like (Canon of Medicine written by Avicenna in early 11th century AD) were used as main medical text in western and eastern medical practices. Persian Medicine was based on humoral theory and 4 elements. It was believed to 4 humors (Khelt) including Phlegm (Balgham), Blood (Dam), Yellow bile (Safr) and Black bile (Sauda) with special qualities; cold and wet, hot and wet, hot and dry and cold and dry, respectively. Nutrition was considered as a one of the six principles of health care (Setteh-e-Zaruriea) in PM with especial importance in treatment and prevention of diseases. Persian Medicine physicians like Rhazes believed that if prevention and treatment of diseases are possible via food, the physician should not prescribe medicines. There were many principles, foods and drugs in PM to prevent and treat hemorrhoids. Some of such treatment approaches and medicines were studied and evaluated by researchers recently; such as a review article on medicinal plants used in PM or the effects of Mule  and Allium ampeloprasum L. on hemorrhoids in clinical studies. But, there are not any comprehensive studies on the food plants, in particular vegetables which were mentioned in PM manuscripts to prevent and treat hemorrhoids. Therefore, in this study, we aimed to investigate about such vegetables in the PM texts and compare these effects with current findings to find new potentials among vegetables in prevention and treatment of hemorrhoids.

METHODS

In this literature research, we looked forward to the vegetables mentioned for hemorrhoids in some main PM and pharmaceutical manuscripts from 9th to 19th century CE (Table 1). Then, we used some reference books like “matching the old medicinal plant names with scientific terminology” and “dictionary of Iranian plant names” as well as other current investigations in literature to identify the current and scientific names of the plants in PM manuscripts. Finally, the probable mechanisms of actions and the efficacy of the resulted plants were investigated by searching literature in main databases like PubMed, Scopus, Google Scholar as well as Pharmacognosy text books like “Treatise and Evans Pharmacognosy” to compare traditional and current findings.

RESULTS

Persian physicians believed that there are relations between abnormal humors with hemorrhoids. So, they suggested laxatives to remove black bile (sauda) (foods are always preferred than drugs). Also, patients with hemorrhoids should avoid to eat foods which produce extensive and thick blood humor (blood in combination with black bile) such as lentil, eggplant, cabbage, beef, salty and thick edibles like salty fish. On the other hand, there were some suggested foods as body detoxifier such as a simple soup cooked with parsley, leek, barley with fat poultry (sfidbag). Alongside different approaches to prevent and treat hemorrhoids in PM like nutrition regimens, medicines and manual procedures (laxatives, analgesics, vasoconstrictors, vessels disclosers, venesection, cupping, leech therapy, surgery); vegetables have an important role among Persian physicians’ prescriptions. These suggested vegetables (12 food plants) in PM and current findings about them are presented in Table 2. According to the Table 2 some of them like Allium ampeloprasum (A. ampeloprasum), Mentha spicata (M.
<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>Plant family</th>
<th>Qualities in humoral Medicine</th>
<th>Parts used for activity</th>
<th>Useful effects in current investigations</th>
<th>Type of study</th>
<th>Extract</th>
<th>Active compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parsley</td>
<td>Petroselinum crispum (Mill.) Fuss</td>
<td>Apiaceae</td>
<td>Hot/dry</td>
<td>Seeds, Leaves and stems</td>
<td>Laxative Anti-bacterial Anti-inflammatory Wound healing Anti-inflammatory &amp; Anti-bacterial Antimicrobial</td>
<td><em>In vivo</em></td>
<td>Aqueous extract</td>
<td>Essential oil (apiol)</td>
</tr>
<tr>
<td>Leek</td>
<td>Allium ampeloprasum L.</td>
<td>Amaryllidaceae</td>
<td>Hot/dry</td>
<td>Leaves</td>
<td>Anti-inflammatory &amp; Anti-bacterial Anti-inflammatory &amp; Anti-bacterial Antimicrobial</td>
<td><em>Clinical Trial</em></td>
<td>Aqueous &amp; Methanolic extract Leaves extract cream</td>
<td>Phenolic content, Flavonoid, Tannins, Steroid (saponins), Glucosides</td>
</tr>
<tr>
<td>Spearmint</td>
<td>Mentha spicata L.</td>
<td>Liliaceae</td>
<td>Hot/dry</td>
<td>Leaves</td>
<td>Anti-inflammatory &amp; Anti-bacterial Anti-inflammatory &amp; Anti-bacterial Antimicrobial</td>
<td><em>Clinical Trial</em></td>
<td>Ethanolic extract Tea</td>
<td>Flavonoid, Terpenoids</td>
</tr>
<tr>
<td>Dill</td>
<td>Anethum graveolens L.</td>
<td>Apiaceae</td>
<td>Hot/dry</td>
<td>Seeds, Leaves, Roots, Callus</td>
<td>Analgesic &amp; Anti-inflammatory Antibacterial Analgesic &amp; Anti-inflammatory Antibacterial</td>
<td><em>In vivo</em></td>
<td>Aqueous extract, Oil-based (sesame oil) dill extract</td>
<td>Polyphenols, Tannins, Flavonoids (catechins)</td>
</tr>
<tr>
<td>White lupin</td>
<td>Lupinus albus L.</td>
<td>Fabaceae</td>
<td>Hot/dry</td>
<td>Seeds</td>
<td>Antimicrobial, &amp; Anti-inflammatory Anti-inflammatory Antimicrobial</td>
<td><em>In vivo</em> &amp; <em>In vitro</em></td>
<td>Ethanol, Methanol, Hexane, Benzene, Chloroform, Propanol, Petroleum ether, Ethyl acetate, Glacial acetic acid, Acetate extracts</td>
<td>Essential oil (apiole), Lipid (Inoleic acid), Ether (anethole), Flavonoid (ginscine), Cinnamic acid</td>
</tr>
<tr>
<td>Garden cress</td>
<td>Lepidium sativum L.</td>
<td>Brassicaceae</td>
<td>Cold/wet</td>
<td>Seeds</td>
<td>Laxative Analgesic, Fracture healing, Anti-inflammatory Antimicrobial</td>
<td><em>In vivo</em></td>
<td>Aqueous extract</td>
<td>Steroid (saponins), Phenol (antraquinones), Lipid (fatty acids), Protein, Mucilages in seeds, Lipid (α-linoleic acid)</td>
</tr>
<tr>
<td>Rhubarb</td>
<td>Rheum ribes L.</td>
<td>Polygonaceae</td>
<td>Cold/dry</td>
<td>Root, Stalk, Seeds</td>
<td>Antimicrobial</td>
<td><em>In vivo</em></td>
<td>Methanolic &amp; Ethanolic extracts</td>
<td>Physcion, Aloe-emodin, chrysoaphanol, Rhein, Aloe-emodin, Physcion-8-O-glucoside, Aloe-emodin-8-Oglucoside, Senoside A, Rhapontin, Alcohol (Branoil), Ether (estragole, methyl chavicol), Flavonoids, Tannins, Phenol (caffic Acid, rosmaric acid), Trepen(E)-beta-caryophyllene, eucalyptol, Alkaloids (oleacine), Fatty acids, Terpenes, coumarins, Flavonoids, Volatile oil, Cermides, Cerebroside</td>
</tr>
<tr>
<td>Basil</td>
<td>Ocimum basilicum L.</td>
<td>Lamiaceae</td>
<td>Hot/dry</td>
<td>Aerial part</td>
<td>Anti-inflammatory Analgesic, Wound healing Analgesic &amp; Antimicrobial</td>
<td><em>In vivo</em></td>
<td>Essential Oil complexed with β-cycloextrin</td>
<td></td>
</tr>
<tr>
<td>Purslane</td>
<td>Portulaca oleracea L.</td>
<td>Portulacaceae</td>
<td>Cold/wet</td>
<td>The aerial part</td>
<td>Antibacterial Wound healing</td>
<td><em>In vivo</em></td>
<td>Extracted Alkaloid</td>
<td></td>
</tr>
</tbody>
</table>
Vegetables, mentioned in Persian Medicine manuscripts to prevent and treat hemorrhoids (continued)

<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>Plant family</th>
<th>Qualifying in Humoral Medicine</th>
<th>Extract used for current investigations</th>
<th>Useful effects in current investigations</th>
<th>Type of study</th>
<th>Active compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpkin</td>
<td>Cucurbita pepo L.</td>
<td>Cucurbitaceae</td>
<td>Cold/wet</td>
<td>Methanolic extract</td>
<td>Wound healing &amp; Antimicrobial</td>
<td>In vivo</td>
<td>Sterols, Polysaccharides, Fixed oils, Lipid (polyunsaturated fatty acids)</td>
</tr>
<tr>
<td>Fenugreek</td>
<td>Trigonella foenum-graecum L.</td>
<td>Fabaceae</td>
<td>Hot/dry</td>
<td>Ethanolic extract</td>
<td>Anti-inflammator, &amp; Analgesic</td>
<td>In vivo &amp; In vitro</td>
<td>Sulfur (trans-S-((cysteine sulfoxide, S-methyl-cysteine sulfoxide, S-propylcysteine sulfoxides), Cycloallicin, Phenol)</td>
</tr>
<tr>
<td>Onion</td>
<td>Allium cepa L.</td>
<td>Amaryllidaceae</td>
<td>Hot/dry</td>
<td>Alcoholic extract</td>
<td>Antibacterial, Wound healing</td>
<td>In vitro &amp; In vivo</td>
<td>Alkaloids, Steroids (saponins), Phenols</td>
</tr>
<tr>
<td>Trigona</td>
<td>Ceratitis gigantea L.</td>
<td>Plantaginaceae</td>
<td>Hot/dry</td>
<td>Methanolic extract</td>
<td>Anti-inflammator &amp; Antimicrobial</td>
<td>In vivo</td>
<td>Vitamin (tocopherol, paraaminobenzoic acid), Sterols, Polysaccharides, Fixed oils, Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
<tr>
<td>Capsicum</td>
<td>Ocimum basilicum</td>
<td>Lamiaceae</td>
<td>Cold/wet</td>
<td>Methanolic extract</td>
<td>Antimicrobial &amp; Analgesic</td>
<td>In vivo</td>
<td>Polysaccharide (FWEP), Phenols, Tannins, Proteins, Volatile oil, Flavonoid (quercetin)</td>
</tr>
<tr>
<td>Spinacia</td>
<td>Lepidum sativum (L. sativum)</td>
<td>Fabaceae</td>
<td>Hot/dry</td>
<td>Ethanolic extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vitro</td>
<td>Flavonoid, Alkaloids, Steroids, Polysaccharides, Fixed oils</td>
</tr>
<tr>
<td>Carrot</td>
<td>Daucus carota L.</td>
<td>Apiaceae</td>
<td>Hot/dry</td>
<td>Methanolic extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vivo</td>
<td>Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
<tr>
<td>Lemon</td>
<td>Citrus limon L.</td>
<td>Rutaceae</td>
<td>Cold/wet</td>
<td>Ethanol extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vitro</td>
<td>Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Lactuca sativa L.</td>
<td>Asteraceae</td>
<td>Cold/wet</td>
<td>Ethanolic extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vivo</td>
<td>Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Brassica oleracea</td>
<td>Brassicaceae</td>
<td>Cold/wet</td>
<td>Methanolic extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vivo</td>
<td>Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
<tr>
<td>Kaffir Lime</td>
<td>Citrus hystrix L.</td>
<td>Rutaceae</td>
<td>Cold/wet</td>
<td>Methanolic extract</td>
<td>Anti-inflammator, Wound healing</td>
<td>In vivo</td>
<td>Lipid (polyunsaturated fatty acids), Sterol, Proteins, Terpenes (carotenoid, 7-aminobutyric acid)</td>
</tr>
</tbody>
</table>

**DISCUSSION**

As was mentioned in the results, cur...
Alkaloid (oleracine) ↓ NO, ↓ IL6, ↓ PG2, ↓ TNF-α

Hydro-ethanolic extract of Portulaca oleracea ↑ Th1/Th2 (IFN-γ/IL-4) balance, ↑ Treg/Th2 (IL-10/IL-4) balance

Anti-inflammation Analgesic

Inhibit initiation stage of inflammation reaction
Inhibit the synthesis of prostaglandins
Free radical scavenging
Inhibit cyclooxygenase and lipoxgenase
Inhibit the biosynthesis of eicosanoids
Character of its putative antioxidant

Alkaloid & Steroid

Stimulation of the immune system
Reduction of prostaglandins
Analgesic

Saponins and anthraquinones (ACh-like components)
Muscarinic receptor blocker
Insoluble in water
Laxative

Saponins and anthraquinones (ACh-like components)
Muscarinic receptor blocker
Insoluble in water
Laxative

Flavonoid

Free radical scavenging action
Antioxidant activities in fenugreek water-extractable polysaccharides (FWEP)

Pro-inflammatory effect (via the polyunsaturated fatty acids)
Anti-inflammatory effect (via the antibacterial and antioxidant activities)
Wound healing
Antioxidant activities in fenugreek water-extractable polysaccharides (FWEP)

Figure 1 Anti-inflammatory and analgesic mechanisms of flavonoid and alkaloid

Figure 2 Analgesic mechanisms of alkaloid and steroid

Figure 3 Laxative mechanisms of apiol, saponins and anthraquinones

Figure 4 Wound healing mechanisms of polysaccharides and lipids
rent studies support the efficacy of most of these vegetables due to their laxative, anti-inflammatory, antimicrobial, analgesic, wound healing effects, etc. The most main active compounds that are responsible for almost all of the effects of mentioned vegetables on hemorrhoids belong to Phenols, Steroids, Flavonoids and Tannins. Therefore, traditional beliefs meet current supports in most cases and most of these vegetables can be considered as potentials for further clinical studies to find new options for prevention and management of hemorrhoids based on ancient knowledge. Although, Persian physicians prescribed these vegetables based on humoral theory and current findings support their possible effects on prevention or management of hemorrhoids, there is only one case, A. ampeloprasum which was evaluated in a clinical study for hemorrhoids and other mentioned vegetables were not trialed directly for this disorder. Therefore, there are very good suggestions to further evaluations as natural candidates to find new drugs, supplements or as a part of nutritional regimens. Furthermore, these vegetables have been part of people’s food for a long time. Therefore, the expected side effects of them are less than usual treatments and also acceptance of them are easier for the patients. It means that they have better compliance for the patients. There are some concerns about these natural remedies. It needs to be considered them as natural drugs and consider their any probable unwanted effects. Also, there are some challenges for formulation and standardization of them. The PM manuscripts can present natural candidates based on ancient knowledge and human experience of generations, but presenting them as new drugs, supplements and even nutritional regimen needs to studies on their efficacy and safety. Vegetables were as natural remedies prescribed by Persian physicians to prevent and treat hemorrhoids. The 12 vegetables meet the support of current investigations and can be considered for further investigations to find new remedies.

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