

Topical Remedies for the Treatment of Men's Sexual Dysfunction from the Perspective of Traditional Persian Medicine: A Review Article

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Abstract

Background: Sexual dysfunction is one of the most prevalent complaints in men over 50 years old, which can negatively affect marital life and self-esteem. Consumption of oral drugs has various limitations, and they have serious interactions with other oral agents.

Methods: In this review article, the main traditional Persian medicine (TPM) sources were reviewed for topical suggestions for the treatment of men with sexual dysfunction. In addition, the herbal medicines and their constituents were reviewed in electronic databases including PubMed, Scopus, and Web of Sciences.

Results: In TPM sources, various agents in oil, decoction, dry powder, suppository, and enema preparations are suggested to treat decreased libido, premature ejaculation, and erectile dysfunction. These preparations often include volatile agents that enhance percutaneous absorption. Accordingly, the literature review suggested that the mechanisms of these remedies could be related to enhancing the regional blood flow to the genitalia, inducing venous smooth muscle relaxation and increasing the tonicity of pelvic floor muscles.

Conclusion: TPM suggestions in treating sexual dysfunction in men can ignite new ideas for further research based on the proposed mechanisms of action.

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Introduction

According to the Diagnostic and Statistical Manual

of Mental Disorders, Fifth Edition (DSM-V), *sexual dysfunction* is defined as various clinical conditions leading to sexual response or orgasm defects. For instance,

decreased libido, erectile dysfunction, anorgasmia, delayed ejaculation, premature ejaculation, dyspareunia, drug-induced sexual dysfunction, as well as other specified and unspecified sexual defects are classified in this category.¹ Erectile dysfunction, defined as the inability to maintain an erection during sexual activity,^{2,3} and premature ejaculation, referring to ejaculation before the expected time, can cause dissatisfaction and anxiety.^{3,4} are the most prevalent forms of sexual dysfunction in men.⁵ More than one-third of men worldwide experience these two pathologies during their lifetime.⁶ Sexual dysfunction can cause serious problems in marital life, sexual life, as well as fertility.⁷

Sexual dysfunction is often multifactorial; thus, various conditions such as mental health issues as well as hepatic, renal, cardiovascular, pulmonary and endocrinologic diseases, debilitating problems, and extreme thinness can be implicated in the pathogenesis of this problem. Further, antipsychotic and antidepressant agents, along with drugs affecting the central nervous system such as beta-blockers and antihypertensives, can be attributed to this issue.^{8,9} Hypothalamus-pituitary axis abnormalities, thyroid gland diseases, and hyperprolactinemia can cause erectile dysfunction. Atherosclerosis of hypogastric artery or penile arteries, degenerative or traumatic insults to tunica albuginea, and fibroelastic changes in the penile smooth muscles are other etiologies of erectile dysfunction.⁹

The pathophysiology of premature ejaculation is not yet fully understood. In the chronic life-long form of this disease, genetic factors seem to be of utmost importance. The acquired form can be due to mental and behavioral problems, pelvic floor defects, and glans hypersensitivity (hyperresponsiveness of motor neurons of the pudendal plexus). Alternatively, it can be secondary to endocrinologic, urologic (inflammation of the urogenital tract and the prostate), or neurologic diseases.^{1,10} Elevated testosterone is associated with premature ejaculation, and lower testosterone levels are associated with delayed ejaculation, mostly seen in men over 50 years of age.¹¹

Non-pharmacologic therapies of sexual dysfunction mostly emphasize lifestyle modification and avoidance of atherosclerotic risk factors as well as disruptive factors in the pelvic blood supply. Psychotherapy and strengthening the pelvic floor muscles are specifically effective in treating premature ejaculation.¹²⁻¹⁵

Evidence showed that the prevalence of complementary and alternative medicine use among the male with sexual dysfunctions was near 75%.¹⁶ To the best of our knowledge, there was no study about the topical remedies suggested by the sages of TPM that could be effective in men's sexual dysfunction. Therefore, we aimed to assess the TPM sources to find the topical remedies with potential effects for

treatment of men's sexual dysfunction.

Methods

In this review article, the primary sources of TPM about sexual dysfunction (Za'af-e-bah) including Al-Qanun fi at-Tibb (the Canon of Medicine), Zakhireye Khwarazmshahi, Tibb-e-Akbari, Sharh Al-Asbab Wa'l Alamat, Exir-e-Azam, along with the primary pharmacology resources such as Makhzan-al-Advia and Qarabadin-e-Salehi were reviewed. In this regard, the keywords including "Za'af-e-bah" (*sexual weakness*), "Noghsan-e-bah" (*impotence*), "Moghavi-e-bah" (*sexual power tonic*), and "Esterkhah-e-alat" (*looseness of the penis*) in men were searched in the mentioned TPM sources, and the related data were extracted. Then, the suggested topical treatments for sexual dysfunction in men by the TPM sages were assessed in PubMed, Scopus, and Google Scholar using the scientific names of the species described by Dr. Ghahremani and Dr. Soltani.

Results

The treatment of sexual dysfunction in TPM is based on lifestyle modification and the underlying cause.¹⁷ The TPM sages believed that sexual ability was affected by diet, obesity, thinness, and diseases of the cardiovascular, nervous and gastrointestinal systems.^{18,19} Apart from advice to treat the underlying etiologies of sexual dysfunction, topical treatments have been advocated in TPM.²⁰ In this regard, the topical treatments for sexual dysfunction in TPM can be divided into general and specific recommendations:

General Recommendations

Massage

Massage with oil is the most frequently suggested treatment method for sexual dysfunction. Different oils in the warm and cold temperaments, based on the concept of TPM,²¹ are used for sexual dysfunction which can be applied to the suprapubic area, perineum, scrotum, and the soles of the feet (Table 1). Sometimes, these herbal oils were mixed with animal fat such as duck and fox in the hope of enhanced efficacy.

Topical Bathing

Topical bathing or "Abzan", as called in TPM, using herbal decoctions of Myrtle leaves (*Myrtus communis*), pomegranate flower (*Punica granatum*), pomegranate peel, and Sumac (*Rhus* spp.)

Herbal Medicine

Herbal dry powders were sometimes used topically; for example, the patients were advised to have their penis and scrotum in a bag full of broad bean (*Vicia faba*) powder, pellitory (*Anacyclus pyrethrum*)

Table 1: The herbal agents proposed in traditional Persian medicine for treatment of sexual dysfunction and their mechanisms of action^{27,55,56}

Goals of traditional use	Traditional Persian name of the herbal remedy	Common name of the herbal remedy	Scientific name of the herbal remedy	Possible mechanism of action	
Treatment coldness of temperament (that lead to decrease the penile blood flow)	<i>Bān</i>	Moringa	<i>Moringa Arabica</i> , <i>M.pterygosperma</i>	Strong fragrance, stimulation of the central nervous system and the skin, increase regional blood flow and stimulate Nitric oxide secretion (Saffron)	
	<i>Yasamin</i>	Jasmine	<i>Jasminum officinale</i>		
	<i>Zanbagh</i>	Irises	<i>Iris songarica</i>		
	<i>Sousan</i>	Lily	<i>Lilium sp.</i>		
	<i>Narges</i>	Daffodil	<i>Narcissus tazeta</i>		
	<i>Moshk</i>	Musk	<i>Moschusmos chiferus</i>		
	<i>Qust</i>	Costus	<i>Costus sp.</i>		
	<i>Razeghi</i>	Arabian jasmine	<i>Jasminum sambac</i>		
	<i>Balsan</i>	balsam	<i>Commiphora opobalsamum</i>		
	<i>Uod</i>	Aquilaria	<i>Aquilaria agallocha</i>		
	Treatment of the sever hotness of the temperament and reduction of inflammation	<i>Anghouzeh</i>	Asafoetida	<i>Ferula assa-foetida</i>	Increase regional blood flow, antioxidant constituents such as vitamin E, Acetyl Choline, and stimulation of testosterone production
		<i>Sum</i>	Garlic	<i>Allium sativum</i>	
		<i>Yellowish kheiri</i>	Wallflower	<i>Cheiranthus cheiri</i>	
		<i>Za'afaran</i>	Saffron	<i>Crocus sativus</i>	
		<i>Zanjabil</i>	Ginger	<i>Zingiber officinale</i>	
		<i>Khardel siyah</i>	Black mustard	<i>Brassica nigra</i>	
		<i>Mur</i>	Myrrh	<i>Commiphora molmol</i>	
		<i>Onsol</i>	Squill	<i>Drimia maritima / Urginea maritima</i>	
		<i>Jowz</i>	Walnut	<i>Juglans regia</i>	
		<i>Cotton</i>	Levant cotton	<i>Gossypium herbaceum</i>	
Decreasing wetness of the temperament (that lead to pelvic floor weakness)	<i>Zetune</i>	olive	<i>Olea europaea</i>	Anti-inflammatory and muscle relaxant	
	<i>Gazaneh</i>	Common nettle	<i>Urtica dioica</i>		
	<i>Hasak</i>	Bindii	<i>Tribulus terrestris</i>		
	<i>Battikh</i>	Melon	<i>Cucumis melo</i>		
	<i>Banafsaj</i>	Common violet	<i>Viola odorata</i>		
	<i>Khass</i>	Lettuce	<i>Lactuca sativa</i>		
	<i>Gharaâ</i>	Pumpkin	<i>Cucurbita pepo</i>		
	<i>Khashkhash</i>	Opium poppy	<i>Papaver somniferum</i>		
	<i>Ass</i>	Myrtle	<i>Myrtus communis</i>		
	Enema	<i>Abhol</i>	Savin		<i>Juniperus excelsa</i>
<i>Vaj</i>		Sweet flag	<i>Acorus calamus</i>		
<i>Joz-ol-sarv</i>		Common juniper	<i>Juniperus communis/ Cupressus sempervirens</i>		
<i>Saâd</i>		Nut grass	<i>Cyperus rotundus</i>		
<i>Batm</i>		khinjuk	<i>Pistacia khinjuk</i>		

powder, or Aquilaria (*Aquilaria agallocha*) powder for 24 hours. They were also advised to apply walnut (*Juglans regia*) and almond (*Prunus dulcis*) powders as well as their leaves to the soles of their feet. Sometimes, powders were prepared as emulsions or poultices combined with other agents. Emulsion of yellow bergamot (*Citrus bergamia*) peel powder was applied to the penis, the emulsion of sunflower (*Helianthus annuus*) was applied to the back, Henbane (*Hyoscyamus niger*) poultice was applied to the soles, and the poultice of wild ginger (*Zingiber officinale*) and buffalo milk or the poultice of Nettles (*Urtica dioica*) seed as well as milk fat was applied to the penis.²²⁻²⁸

Enema

Enema with cottonseed (*Gossypium spp*) oil, nutgrass (*Cyperus rotundus*), or the combination of

milk fat, walnut (*Juglans regia*) oil, ginger (*Zingiber officinale*), and Bindii (*Tribulus terrestris*) is advised for the treatment of erectile dysfunction.²²⁻²⁸

Other Topical Recommendations

Anal and urethral suppositories were also used to induce erection. Asafoetida (*Ferula assa-foetida*) alone or with violet (*Viola odorata*) oil was prepared as an intraurethral suppository. Anal suppositories were produced using cottonseed (*Gossypium spp.*), pellitory (*Anacyclus pyrethrum*), coconut (*Cocos nucifera*) oil, and duck fat.²²⁻²⁸

Specific Recommendations

Temperament-based Classification of drugs Recommended in Men's Sexual Dysfunction

Warm-temperament agents are used when sexual dysfunction is accompanied by symptoms of cold

temperaments, such as decreased libido, regional coldness, and diminished regional blood flow. On the other hand, cold-temperament agents are used when sexual dysfunction is accompanied by symptoms of warm temperament or inflammation such as dysuria, painful ejaculation, and regional erythema. Astringent agents are used when symptoms of weakness (for example, in the pelvic floor muscles) are observed.²²⁻²⁸

Discussion

In TPM, various topical agents are suggested to treat male sexual dysfunction, based on the signs and symptoms as well as the differential diagnoses. To use such topical agents, we first need to understand the potential mechanisms of action. We know that erection occurs due to the stimulation of cholinergic receptors of the endothelial cells as well as smooth muscle relaxation caused by vasoactive agents such as nitric oxide and prostaglandin E2 secreted from the endothelial cells once they have been stretched. The corpora cavernosa is then filled with blood, making the penis erect.²⁹⁻³¹

The main obstacle in using topical agents for sexual dysfunction is the low permeability of the penile skin. Nowadays, various formulations of semipolar and nonpolar soft enhancers of percutaneous absorption are being used. However, there is evidence that topical agents can induce erection via vasoactive reactants such as acetyl choline, nitroglycerine, and minoxidil. They can also help maintain an erection by relaxing the venous smooth muscles.^{1, 32, 33}

In TPM resources, we see that dry powders were less frequently used topically. Oil-based decoctions were the first-choice agents in most cases so that the absorption would be enhanced. Aromatic agents were used to enhance the regional blood flow and skin permeability.³⁴ For instance, equal amounts of wild rue (*Peganum harmala*) seeds, castor bean (*Ricinus communis*), and mustard (*Sinapis spp.*) seed with 0.5 gram of jasmine oil applied on the penis and scrotum help maintain an erection.^{22, 25, 28} Moreover, evidence showed that Bindii (*Tribulus terrestris*) could cause penile erection by increasing the androgen levels and nitric oxide (NO) release from nerve endings that supply the corpus cavernosum.³⁵ Furthermore, the evidence demonstrated that Moringa could increase serum testosterone but suppress the phosphodiesterase type 5 (PDE-5) activity that leads to the improvement of sexual functions.³⁶

The mechanisms of action of topical herbal agents are diverse. Although it seems that herbal agents, especially in their oil-based preparations, enhance the regional blood flow and relax the venous smooth muscles, these are not the sole mechanisms of their action.^{37, 38} The possible mechanisms by which the herbal agents could improve sexual function are as follows:

Muscle Relaxation

Myolytic properties of papaverine, as a non-narcotic alkaloid, have made it a potential candidate for intra-cavernous injection for smooth muscle relaxation and enhancement of erection.³⁹

Increased Regional Blood Flow

Most topical treatments suggested by TPM include aromatic and volatile compounds which can boost the regional blood flow through mild skin irritation. A clinical study performed on the efficacy of saffron oil revealed that this agent was effective in the treatment of erectile dysfunction in diabetic patients. The suggested underlying mechanism of this clinical finding is the stimulation of NO secretion from the endothelial cells.⁴⁰ Enhanced sexual function can be seen in the systemic consumption of some oils. For example, Squill (*Urginea maritima*) oil has been found to have positive inotropic effects and positive effects on sexual dysfunction.^{41, 42} Moreover, previous studies revealed that Asafoetida (*Ferula assa-foetida*) was a vasodilator,^{43, 44} showed positive effects in the treatment of infertility, sexual dysfunction, erectile dysfunction, and increased the sperm counts in men.^{45, 46} Topical agents can act as a covering layer with warming effects against the cold temperament, which can, in turn, reduce the blood flow and impair sexual function. Evidence showed that keeping the body warm and wearing socks during intercourse can increase pleasure and reduce the time required to reach orgasm as evaluated by brain scan.⁴⁷

Effects on the Nervous System

Another suggested mechanism of action for topical herbal agents is their effect on the nervous system via their fragrance. The hypothalamus, limbic system, and brain's cortex affect the erection via adrenergic neurotransmitters and hormones. Any agent that could reduce catecholamines in the peripheral blood or lower the sympathetic stimulation can prolong the erection. Increased levels of dopamine in the brain, in contrast to serotonin, can enhance libido. Since most of the topical agents used in TPM have very strong fragrances, they can act on the central nervous system via their aroma.⁴⁸

Endocrinologic Effects

Topical testosterone gel was effective in 32.6% of cases with erectile dysfunction. Evidence suggests that ginger (*Zingiber officinale*) and Bindii (*Tribulus terrestris*) can elevate the level of testosterone in the blood.⁴⁹⁻⁵² These herbal agents can be prepared in suppository form.

Strengthening Pelvic Floor Muscles

Some TPM suggestions have high concentrations

of tannin which can refine the regional vascular defects and enhance the tone of the pelvic floor smooth muscles. Nowadays, non-pharmacologic pelvic floor strengthening techniques are being used to treat erectile dysfunction and premature ejaculation. Assessing the efficacy of herbal agents for this matter is a relatively new area.^{53, 54}

Thus, due to various mechanisms of action for suggested treatments of sexual dysfunction in TPM, the clinical use of such agents depends on the underlying etiology of sexual dysfunction.

The strength of this article could be focusing on topical remedies and manipulations for the treatment of men's sexual dysfunction which has been potentially neglected in conventional medicine. Therefore, this narrative review can open a new window in this field. On the other hand, there were some limitations in this study. First, we reviewed the most common sources of TPM in this study, so it is suggested that this study should be repeated using the other sources of TPM, as well as the sources of the other traditional and complementary medicine such as Unani medicine, Chinese medicine, Indian medicine, Ayurveda, etc. Next, there were few evidence-based documents on the efficacy of topical herbal remedies in the treatment of men's sexual dysfunction. Therefore, it is suggested that clinical trials should be designed to examine the efficacy the manual therapies and topical herbal remedies, especially which ones are recommended by the TPM sages, in the treatment of men's sexual dysfunction.

Conclusion

TPM sages recommended that manual therapy including massage, topical bathing, and enema, as well as topical administration of some herbal remedies, could be effective in the treatment of men's sexual dysfunction. In this regard, further studies are suggested to examine the TPM sages' recommendations for the treatment of these problems in men. Furthermore, multiple mechanisms of action are proposed for herbal agents used in TPM, for the treatment of sexual dysfunction in men, allowing further clinical research for the treatment of sexual dysfunction such as decreased libido, premature ejaculation, and erectile dysfunction.

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Ethical Statement

The protocol of the study was approved by the Research Ethics Committee of Shiraz University of Medical Sciences.

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Authors' Contribution

AMJ: Conceptualization, investigation, resources, data curation, writing the original draft; and supervision, AH: Conceptualization, investigation, resources, data curation, writing the original draft, methodology, and supervision. FA: Methodology, resources, data; curation, validation, and editing. AHH: Methodology, data curation, writing, reviewing, EA: Resources, data curation, reviewing, and editing. MMP: Conceptualization, resources, data curation, reviewing, and editing, and critical revision. All authors reviewed the manuscript and approved the final version. They take full responsibility for the content and writing of this article.

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