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Concept Definition

The Concept of *"Masam"* (Pores) in Persian Medicine

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Abstract

Persian Medicine (PM) is a holistic school of medicine with a unique philosophy and terminology. ***"Masam"*** (pores) is a widely used concept in PM literature, both in physiologic and pathologic conditions, defined as natural openings on the skin surface and also other organs. Penetration of substances topical medications, expulsion of substances including hair, excretion of waste products such as sebum and sweat, and substance transport in various organs, including the placenta, uterus, synovial membrane, stomach, muscle, lung vessels etc. are facilitated through these macroscopic, microscopic and nanoscopic pores. ***"Masam"*** are subject to various alterations, including collapse and occlusion, which may lead to bad deposition of material in the body and prevention of the ***Haar -***innate heat- from reaching the organs, leading to dysfunction and dystemperament. Changing rheological characteristics of such material by ***"Nozj"*** may help their removal and therefore open ***"Masam"*** to yield the return of normal organ temperaments and functions.

Keywords: Masam, Pores, Skin, Persian Medicine, Traditional Iranian Mdicine.

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Introduction

Persian Medicine (PM) is an authentic medical school that considers the world and the human body, a perfect system created by the wise almighty God [1, 2]. Dating back to over 6000 years B.C, it is a series of principles and theories arising from philosophical fundamentals, and relying on centuries of precise observations and practical experience [3].

This rich school of medicine has a unique terminology, an instance of which is ***"Masam"*** مسام meaning little holes or pores. Generally located in the skin, ***"Masam"*** take part in physiologic functions. However, there is another important aspect to this concept, as anatomical and functional disturbances of ***"Masam"*** plays a significant role in the pathophysiology of several diseases, the treatment of which relies on drugs that modify them [4-7].

Although many PM references have mentioned the concept of ***"Masam"***, their function, different variations in disorders and drugs that modify them, but the data is scattered, with no specific and comprehensive chapter on their locations, usages and related disorders. This article is an attempt to gather and discuss the scattered information on ***"Masam"*** in PM literature.

Definition of *"Masam"*

The word ***"Masam"*** is defined as pores, holes or openings [5-10]. PM categorizes body openings and orifices into perceptible (visible) such as nose, ears and anus and imperceptible (functional), the latter further divided into physiologic and pathologic. ***"Masam"*** are physiologic imperceptible openings in the body [4, 11, 12].

Location of "Masam"

The skin is the major location of ***"Masam"***, described as very small pores and holes adjacent to hair follicles, from which body sweat and vapors ***(Bokhar* بخار*)*** are excreted [5, 13, 14].

According to PM references, they generally extend down inside the derm and connect to muscular tissues [11]. In conventional medicine, skin pores are the outlet of pilosebaceous units and sweat-producing -eccrine and apocrine- glands [15, 16]. Pilosebaceous units include hair follicles, which contain hair deeply rooted in subcutaneous tissue, and sebaceous glands, which are intradermal sebum secreting glands, usually with short ducts opening into the upper part of the follicle. Pilosebaceous units are associated with diseases such as acne, milia and hidradenitis supurativa [17].

PM scholars believe ***"Masam"*** (pores) also exist in other body organs such as the eyelids [18], eyes, bones, joints, muscles, stomach, uterus, placenta [4].

According to PM references, ***"Masam"*** exist in eyes and eyelids. Obstruction and condensation ***(Takasof* تکاثف*)*** of these ***"Masam"*** lead to a disease termed Ramad (red eye), while drugs that induce porosity ***(Takhalkhol* تخلخل*)*** are effective in faster recovery of this eye disorder [4, 18]. Contemporary histological studies have identified eyelash follicles, sweat glands and a collection of large sebaceous glands -Meibomian glands- that secrete their discharge to the edge of the eyelid, the inflammation of which is known as sty or chalazion [19].

As for muscles, constriction ***(Enghebaz* انقباض*)*** of ***"Masam"*** is specified to be an etiology of

persistent muscular swelling and inflammation [4].

The existence of ***"Masam"*** in bones and joints is also mentioned in PM. Avicenna believes that axial bones contain ***"Masam"*** [4]. He also believes the main cause of articular pain aggravation in autumn to be related to ***"Masam"***. Dilation of ***"Masam"*** in the previous season –summer, the presence of ill-natured humors ***(Akhlat-e radieh اخلاط ردیه)***, and indigestion, altogether aggravate joint pain making treatment difficult in seasons like autumn. Likewise, hot and moist bathes are considered harmful for joint pain because while facilitating flow of ill-natured humors, they dilate ***"Masam"***, and thus lead to easier penetration of such humors in joint tissues and spaces [4]. Accordingly, it is mentioned in contemporary studies that the articular synovial capsule is covered with synovial membrane, a specialized connective tissue with many ***"fenestrated"*** capillaries. Rapid exchange of substances between the tissues is possible through their small pores.

Avicenna has described ***"Masam"*** in the uterus, and has specified opening ***(Tafteeh تفتیح)*** them as one of the treatments of menstrual retention [4]. Regarding placental ***"Masam"***, the pores developed in the fetal feeding membrane are responsible for embryo nourishment and blood supply [19]. A cold dystemperament ***(su-e mizaj-e bared)*** of uterus tightens the ***"Masam"*** and impairs fetal nourishment [4].

PM literature link the production of bloody sputum with ***"Masam"*** in pulmonary vessels. An increase in vessel moisture leads to vessel laxity and ***"Masam"*** dilation, resulting in blood leakage and hemoptysis [4].

The stomach also contains ***"Masam"***. A component of treatment in dry dystemperament of stomach is a warm-moist bathe, which hydrates the body and dilates ***"Masam"*** [4].

"Masam" Functions

A main function of ***"Masam"*** is skin respiration through which the vital spirit ***(rouh-e hayvani روح حیوانی)*** and the innate heat ***(hararat-e-gharizi حرارت غریزی)*** are refreshed [20, 21].

"Masam" also function as a pathway for excretion of waste material via sweat, sebum and hair [18, 22]. Modern medicine describes sweat pores as accelerator mechanisms of heat loss and secondary excretory organs which excrete nitrogenous waste products and excess salts [19]. As stated in PM references, coagulation of specific types of wastes ***(Bokhare-dukhan بخار دخانی)*** in ***"Masam"*** leads to hair formation [10]. Structural characteristics of ***"Masam"*** are also of importance, as they determine hair features; for example, a curved shape ***"Masam"*** results in curly hair formation [4, 18]. This is confirmed by contemporary literature, which indicate the formation of curly hair to be related to follicle structure; it is understood that curly hair emerges from oval follicles and smooth hair from circular ones [23].

"Masam" are entrance pathways for foreign substances. Penetration depends on the type and conditions of the matter; dense material such as ceruse (sefidab) are not able to enter the skin through ***"Masam"***, while entrance of some substances depends on drugs that increase their

penetration [4]. Some studies have examined variations of hair follicle distribution in different body sites and concluded that the number of hair follicles in the forehead and calf region is much more than other skin areas such as the upper arm and can therefore be recommended for topical application of drugs for better systemic penetration and absorption [24].

"Masam" Alterations

Either directly or indirectly, ***"Masam"*** mediate manifestations of some diseases. Their obstruction or tightening leads to decreased sweating, alopecia, dry eyelids, infertility, and some types of fever, to name a few. Conversely, ***"Masam"*** dilation causes diaphoresis and increased rate of material removal from the body. Meanwhile, ***"Masam"*** play an important role in the treatment of many disorders; for example, modifying ***"Masam"*** may be used in the treatment of diarrhea, fevers, hemorrhoids, skin eruptions, retention of menstruation, obesity [4, 18, 22].

Overall, these pathologic and therapeutic effects come through different mechanisms and various conditions of ***"Masam"***. Conditions such as excessive opening **(*Enfetah* انفتاح)**, dilation **(*Ettesa* اتساع)**, porosity ***(takhalkhol* تخلخل)**, and also those to the contrary such as obstruction **(*Ensedad* انسداد)**, closure ***(Bastegi* بستگی)**, tightening **(*Tazyeeq* تضییق)** and condensation **(*Takasof* تکاثف)**, are terms that are almost always associated with the word ***"Masam"*** in PM references [4, 18, 22].

Due to the wide range of concepts these specialized terms encompass, discussing them is not possible in this article.

Discussion

Despite the crucial role of ***"Masam"*** in the pathophysiology and treatment of several diseases, no specific chapter has been allocated to this important concept. The present study was an attempt to compile and study PM data on the location, characteristics and applications of ***"Masam".***

PM references define ***"Masam"*** as very small holes and pores mostly opening to the surface of the skin. The wide application, importance, and visibility of ***"Masam"*** in the skin may be reasons as to why only this organ has been stated in the definition. However, it should be kept in mind that Persian physicians have dispersedly mentioned ***"Masam"*** to exist in other organs as well.

Skin ***"Masam"*** match pilosebaceous units and sweat glands; this is because one of their functions is excretion of sweat and sebum and also hair growth. However, since ***"Masam"*** also participate in skin breathing and substance absorption/expulsion, they cannot be limited to pilosebaceous units and sweat glands, probably incorporating a wider range of units.

Based on the functions mentioned for ***"Masam"*** in other body organs, we perceived that they are exchange pathways of materials. Generally, it seems that Persian physicians considered ***"Masam"*** as functional units as well as visible pores.

Based on the results of this study, PM scholars considered ***"Masam"*** as means of material transport and penetration. Currently, advanced modern instruments provide details of material exchange between body organs, tissues and cells. It is consequential that Persian physicians

realized specific factors for transport of materials, without having exact details of body histology, only with observations of signs and symptoms. As stated in our results, various conditions of ***"Masam"*** have also been recognized in PM textbooks: conditions such as opening, dilation, porosity, and also those to the contrary including obstruction, closure, tightening and condensation. Perhaps the Persian physicians' purpose of mentioning these conditions could be due to the changing in the rate of penetration (quantitative permeability) or selective penetration of materials (the qualitative permeability) of the ***"Masam".***

Conclusions

Based on the findings presented in this article, we try to propose a better definition of ***"Masam"*** as: Orifices in the skin and other parts of the body, which are divided into perceptible (visible) and imperceptible (conceptual/functional). Nowadays, even some imperceptible pores such as capillary pores can be seen with an equipped eye. In other words, the term ***"Masam"*** in PM literature points to macroscopic, microscopic and nanoscopic pores in the body which facilitate transport of material in the body. Overall, various characteristics of ***"Masam"*** can be classified into several categories:

1. Facilitating penetration of materials such as oxygen (skin breathing) and topical medications into the body;
2. Allowing expulsion of materials from the body, such as hair growth and excretion of waste products like sebum, sweat, and carbon dioxide;
3. Acting as an exchange pathway for materials in various organs within the body, including the placenta, uterus, synovial membrane, stomach, muscle, lung vessels, etc.;
4. Taking various characteristics and the possibility to use these conditions in diagnosis and treatment of many disease states and observing the bioavailability of drugs.

Nevertheless, the ***"Masam"*** described by PM literature include vascular and non-vascular openings in organs, which may collapse externally or occluded internally by bad deposition of material including humor, as named the ***"Bad-Anbasht syndrome"*** [25, 26] in previous articles. This obstruction may lead to blockage of the Haar [21] -as the innate functional potential- and the innate heat and moisture to reach the organs causing dysfunction and dystemperament [27]. Changing the rheological characteristics of such material by a preparation process named ***"Nozj"*** [25] may help their removal and therefore open ***"Masam"*** to yield the return of normal organ temperaments and functions including actions and reactions.

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