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Preventive Care for Gastrointestinal Disorders; Role of Herbal Medicines in Traditional Persian Medicine

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Abstract

Context: Preventive care is a basic rule in current medical practice and traditional Persian medicine (TPM) scholars have introduced a large amount of publications in this valued field. According to TPM principles, healthy stomach has a significant role in providing a fit body and herbal medicines are capable of helping stomach perform this role.

Evidence Acquisition: A wide-ranging search in main TPM books and web engines was performed to compare preventive care in gastrointestinal (GI) diseases through a librarian review study.

Results: There is a close interaction between GI system and other body systems; any ailment in a system could result in dysfunction of stomach and vice versa. There are various herbal medicines that help achieving a healthy stomach following a seven-part preventive rule and in this article, we briefly reviewed some of them such as amla, clove, lemon, black mustard, saffron, ginger, aloe, and mastic.

Conclusions: Following a simple seven-part rule of healthy stomach will result in balanced GI function and a healthy body. Properly consumption of recommended TPM herbal medicines could reinforce the stomach and a healthy GI system through preventive mechanisms.

Keywords: Preventive Medicine, Gastrointestinal Diseases, Oriental Traditional Medicine, Herbal Medicine, Stomach

1. Context

Gastrointestinal (GI) diseases are among the most common disabilities worldwide. They cause morbidities, economic, and social effects such as decreased quality of life, higher cost of care, and school absenteeism (1-3). One of the most effective experienced ways to overcome the abovementioned hazards is substituting prevention for treatment (4) and consequently, health policymakers should pay more attention to promotion of preventive care and progressively invest in this filed (5, 6). Traditional Persian Medicine (TPM), as an ancient valuable school, concentrates on preventive principles (Osul-e Hifzosiha), especially in the field of GI system (7). Based on quadratic elements (fire, air, water, and soil) and their qualities, GI system accomplishes its inborn normal function. As every subject has specific quality related to its element(s) dominancy in its structure, called temperament or mizadj, different effects are considered (8-11). According to TPM scholars' view, stomach has a cardinal role in body health (12). It functions as a main system in supplying other organs requirements including growth and development. If it works correctly, balanced humors will be generated, which are essential for health (8, 13). The aim of this study was to review the preventive principles of TPM in healthy stomach topic and evaluate them with new scientific findings.

2. Evidence Acquisition

We searched main books of TPM scholars including Al-Havi (by Razes), Canon of Medicine (by Avicenna), and Exir Azam (by Hakim Azam Khan) for GI prevention explanations. Moreover, a comprehensive web search was performed in PubMed, Medline, Scopus, Web of Science, and scientific information database (SID) through March 2014 with the following keywords: stomach, prevention of GI disorders, and traditional medicine.

3. Results

Anatomy of GI system in TPM books is similar to that in modern ones, but the pathophysiology is completely different (14). Regarding TPM, stomach has four faculties (Qwwat): attracting, restraining, digestive, and excretive. These are vital faculties for a complete stomach function and eventually, weakness of any abovementioned features results in GI symptoms (9) as follows:

a) Attracting faculty (Qwwat-e Jaziba): It helps attracting the food from mouth and esophagus to stomach. Hotness and dryness qualities are helpful to this feature. The weakness of the current faculty causes postprandial fullness and pain (14).

b) Restraining faculty (Qwwat-e Masika): Its duty is to hold the swallowed food in stomach during digestion process. Coldness and dryness qualities of the stomach are useful to accomplish the given task. If this faculty becomes weak, the indigestion, heartburn, and GI upset will develop (8).

c) Digestive faculty (Qwwat-e Hazima): This is the basic faculty of stomach and the rest faculties are its servants. The main mission of stomach (digestion) is related to this faculty and the stomach hotness and moistness qualities are supportive. Indigestion, vomiting, diarrhea, abdominal cramp, and malabsorption may develop while this faculty gets weak (14).

d) Excretive faculty (Qwwat-e Dafi'a): The role of excretive faculty is passage of primary digested food toward the elementary canal while coldness and moistness qualities of the stomach help this process. Lack of this faculty may lead to mouth stink and indigestion (8).

The TPM scholars have a special attention to prevention in the field of GI system; there is an emphasis on seven-part rules of healthy stomach. Obeying these rules, the GI function will be optimized. These valuable seven-part rules are as follows:

1) Tanning of stomach: As the time passes, the stomach gradually loses its tone and consequently, becomes weak. One of treatments for this dysfunction is astringent (Ghabiz) agents, which have the ability to tan the stomach and preserve its tonicity. Amla (*Emblica officinalis* L.) is a good example of astringent medicines, which has been repeatedly mentioned in TPM resources for its effect on tanning stomach. It acts as a tonic drug for stomach, too (8, 9, 15). Amla has high soil element content (Table 1), which lead to astringent quality and tonic effect (15). This kind of plants is a source of phenolic compounds and has dry and cold temperament (16). Antioxidant and anti-*Helicobacter pylori* properties of amla in animal model (mice) were shown in recent studies (17, 18) although amla has multiple documented functions (Table 2) (19). These broad-range functions could vindicate the legitimacy of TPM believes about amla's influence on stomach.

2) Remove of stomach softness: Increasing soft waste materials around stomach villi, the stomach will be unable to perform its usual function and the digestion process becomes imperfect. To solve the problem, fragmenting (Moghattia), stubbing (Mohallil), and tendering (Mollatif) agents are necessary, which are found in medicinal plants such as clove (*Eugenia caryophyllata* Thunb) with the dominancy of their fire element. These plants have the ability to wash out the waste materials and to restore the stomach power (9, 14, 15). They are rich in phenolic compounds and essential oils. *In vitro* anti-*H. pylori* and antibacterial effects of clove have been mentioned in literature (20, 21).

3) Stimulation of appetite: Sour (Hamiz), pungent (Herrif), and salty (Malih) materials are good appetizer agents in TPM resources. These agents are used for removing thick humors from stomach, inhibition of vomiting, and reinforcement of stomach. Lemon (*Citrus limon* L.) and black mustard (*Brassica nigra* L.), containing moderate to high levels of fire element, are effective examples of this list. They stimulate the patients' appetite and empower their stomachs through special features like varnishing (Jali), fragmenting, or heating (9, 15). Major compounds in lemon (phenolic compounds and essential oils) have demonstrated gastroprotective property including elevated mucus secretion and anti-ulcer activity (22). Antibacterial, anti-*H. pylori*, anti-inflammatory, and antioxidant effects of black mustard have been explained in current essays with different methods (23-25).

4) Removing excess humidity and gas of stomach: Eliminating the excess humidity and gas of stomach will cause stomach strengthening. Ginger (*Zingiber officinale* Rosc.) is a stomach tonic and helps the digestion process. It has fire element dominancy and removes excess humidity and gas of stomach and actively absorbs these waste materials (9, 15). Experimental studies for evaluation of gastroprotective effect of ginger has been started for a long time (26) and currently, many researchers affirm the issue through their precise surveys (27, 28). Anti-ulcer agents in phenolic compounds and essential oils have been detected and their mechanism of action is under investigation (29). A surprising finding for ginger is its scavenging effect on superoxide and hydroxyl radicals, which may be equivalent with its abovementioned function in discarding excess humidity (30).

5) Unpacking the stomach obstructions: these ca-

pacities are seen in stubbing (Mohallil) and purifying (Monaghi) agents. Aloe (*Aloe barbadensis* Miller) is a suggested plant drug in TPM books, which could stub gases and purify waste humors from GI system using its soil element dominance. It is a potent purgative and tonic medicine for stomach functions (9, 14, 15). Antiulcer and healing effects of aloe have been tested in animal models and the efficacy has been established in numerous documents (31, 32). These properties are supposed to be similar to TPM comments about this herbal medicine.

6) Reviving the stomach faculties: As mentioned before, the quadratic faculties of stomach are vital for stomach function. Organ reinforcement is a key principle in TPM practice and this goal is achieved by proper herbal medications (12). There are some euphoric (Mofarrih) agents that empower total body including stomach. Saffron (*Crocus sativus* L.) is one of the best plant drugs in this group that revives the stomach because of its good smell and astringent quality resulting from soil element dominancy (8, 15). Recent studies also showed antidepressant and anticarcinogenic effects of saffron, which are supportive to TPM theories (33-36). It is so striking that experimental studies approved gastro-protective effect of saffron in GI malignancies (37). It may be the consequence of reviving the stomach faculties and the resulting ability to overcome the neoplastic cells.

7) Maintenance of the innate heat of stomach: One of the most important roles of the sensible body (Tabi'at-e modabbera) is the maintenance of innate heat. This heat is essential in normal function of all body organs. Proper digestion is also related to this innate heat and some herbal medicines have the potential to save and strengthen this feature. Mastic (*Pistacia lentiscus* L.), rich in soil and air elements content, is one of the highly recommended medicinal plants for such a purpose in TPM literature. It is a good source of tonic, tendering, stubbing, varnishing, and astringent agents (8, 15, 38). Overall, 69 constituents of this plant, mostly phenolic compounds, have been analyzed and diverse functions including antioxidant, antimicrobial, and antiulcer effects have been confirmed (39, 40). Mastic gum is also effective in eradication of *H. pylori* infection both *in vitro* and *in vivo* (41, 42) and relives dyspeptic symptoms in patients with functional dyspepsia (43). Although the mechanism of action is not clear currently (43), the effect on gastric function may originate from mastic capacity in preserving the innate heat of stomach.

Table 1. Data About Major Chemical Compounds and Traditional Persian Medicine Dominant Element for Recommended Plant Drugs in Healthy Stomach Topic[a]

Scientific Name	Major Chemical Compound (44)	Alkaloids	Phenolic Compounds	Essential Oils	TPM Element Content (45)			
					Fire	Air	Water	Soil
***Emblica officinalis* L.**	Gallic acid Rutin	×	√	×	M¥[b]	M	L€[b]	H£[b]
***Eugenia caryophyllta* Thunb.**	Eugenol Caryophyllene	×	√	√	M	M	L	L
***Citrus* × *limon* L.**	Limonene β-pinene	×	√	√	M	H	L	H
***Brassica nigra* L.**	Galic acid Quercetine	×	√	×	H	N ∞[b]	L	L
***Zingiber officinale* Rosc.**	Zingiberene Gingerols Shogaols	×	√	√	H	M	L	M
***Aloe barbadensis* Miller.**	Aloin Aloe-Emodin	×	√	×	N	M	M	H
***Crocus sativus* L.**	Safranal Crocin Anthocyanin	×	√	√	L	M	L	H
***Pistacia lentiscus* L.**	Masticadienonic acid Isomastiadienonic acid	×	√	×	M	H	L	H

[a]Abbreviation: TPM, traditional Persian medicine.
[b]€, low; ¥, moderate; £, high; and ∞, none.

Table 2. Data From Traditional Persian Medicine and Current Pharmacology About Recommended Plant Drugs for Healthy Stomach[a]

Scientific name	TPM Name	Medicinal Part	Temperament	Model	References
***Emblica officinalis* L.**	Amlaj	Fruit	Cold (in second grade) and dry (in first phase of third grade)	*In vitro* Swiss Albino Mice	Mehrotra et al. (17); Hari Hari Kumar et al. (18)
***Eugenia caryophyllata* Thunb.**	Qaranfol	Flower bud	Hot and dry (in third grade)	*In vitro, in vitro*	Li et al. (20); Joshi et al. (21)
***Citrus* × *limon* L.**	Limu	Pulp of fruit	Cold (in second grade) and dry (in first grade)	*In vitro*	Rozza et al. (22)
***Brassica nigra* L.**	Khardal	Seed	Hot and dry (in fourth grade)	*In vitro, in vitro* and Rat, *in vitro*	Radha Krishnan et al. (23); Alam et al. (24); Zaidi et al. (25)
***Zingiber officinale* Rosc.**	Zanjabil	Rhizome	Hot (in third grade) and dry (in second grade)	Albino Mice, Rat, Wistar Rat, Rat, *in vitro*	Al-Yahya et al. (26); Goel et al. (27); Khushtar et al. (28); Nanjundaiah et al. (29); Cao et al. (30)
***Aloe barbadensis* Miller.**	Sebr	Exudate	Hot and dry (in second grade)	Rat, RCT	Borrelli et al. (31); Dat et al. (32)
***Crocus sativus* L.**	Zafaran	Stigma	Hot (in second grade) and dry (in first grade)	Mice, RCT	Wang et al. (33); Akhondzadeh et al. (34); Samarghandian et al. (35)
***Pistacia lentiscus* L.**	Mastaki	Gum	Hot and dry (in third phase of second grade)	*In vivo, in vivo*, Mice, RCT	Koutsoudaki et al. (39); Marone et al. (41); Paraschos et al. (42); Dabos et al. (43)

[a]abbreviation, TPM, traditional Persian medicine; RCT, randomized clinical trial.

4. Conclusions

According to TPM resources, GI system including stomach has special preventive instructions to be obeyed accurately. Observing the seven-part rules of healthy stomach will lead to a balance in hotness, coldness, moistness, and dryness of stomach and an empowered stomach faculties. Appropriate use of recommended TPM herbal medicines with specific temperaments (Table 2) and observing essential prerequisites for the prevention of diseases (Osul-e Hifzosiha) for healthy stomach are of great importance in the abovementioned rules (14). The efficacy of some herbal medicines for good function of GI system has been proved in modern medicine. For example, most of 51 essential oils discussed in TPM resources have GI usage for diverse disorders ranging from otitis to hemorrhoid in special dosage forms (40-46). Although the safety and the detection of mechanism of action in herbal preparations are always a matter of concern, the attention has been curved towards ancient medical systems and herbal medicines because of the adverse effects and increasing failure of contemporary drugs (47-49). These effects have been discussed in TPM based on their temperaments and their components could explain these qualities. For instance, mastic is rich in phenolic compounds, which are attributed to hot and dry temperaments (mizadj) (16). The common note seen in modern studies about plants usage in prevention of GI disorders is gastroprotective effect of such herbal medicines. They are good sources of antioxidant, antimicrobial, anti-ulcer, anti-*H. pylori,* and gastro-protective agents. The fundamental role of antioxidant agents in gastric protection is documented through diverse pathways including regulation of acid secretion and improvement of mucosal blood flow (50-52). On the other hand, antimicrobial, anti-ulcer, anti-*H. pylori*, and gastroprotective characteristics of drug plants on GI system fitness are not necessary to be discussed, considering the importance of the preservation of gut microbiota (53). Furthermore, most of these plants are good sources of essential oils (Table 1). As we know, essential oils are secondary metabolites of aromatic herbs and their protective role as antibacterial, antiviral, and antifungal agents has been established (54) and it is surprising that we understand that scented plants have tonic effect on organs such as stomach regarding TPM views (8, 9, 14). The long list of priorities of preventive care makes the application of seven-part rules of healthy stomach rational and intellectual. There are numerous trials evaluating herbal medicines in TPM field (55, 56), but there is a vast area for new clinical trials on TPM herbal medicines, as preventive remedies, waiting for clever scientists.

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Footnotes

Authors' Contributions: Maryam Mosaffa Jahromi and Mehdi Pasalar: Concept of the review, design, data gathering, data analysis, and preparation of the first draft of manuscript. Suleiman Afsharypuor: Concept of the review, design, and revising the first draft of the manuscript. Rasool Choopani, Mahmoud Mosaddegh, Mohammad Kamalinejad, Abdolali Mohagheghzadeh, Ali Mohammad Tamaddon, adn Kamran Bagheri Lankarani: Design and revising the first draft of the manuscript.

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