

## ORIGINAL ARTICLE

### *Jovārish-e Jālīnūs*, the Herbal Treatment of Gastro-Esophageal Reflux Disease in the History of Medicine

#### Abstract

History of medicine is a treasure of interesting experiences of humankind to treat diseases. Traditional medicine is a major part of this long history. World Health Organization (WHO) encourages all countries to extend their complementary and traditional medicines and support trained practitioners in this field. This strategy can lead to finding new treatments and opening new horizons to the herbal medicine researchers. Nowadays, a movement toward the integration of traditional and complementary medicine into mainstream medicine is evident. Iranian Traditional Medicine (ITM) remedies, similar to other branches of complementary and alternative medicine, have been documented to offer the treatment of gastrointestinal diseases.

According to the principles of ITM, the production of abnormal "Humours" in human body can trigger a process through which a disease occurs. Heartburn is known as "*Horqat*" in ITM. Phlegmatic *Horqat* occurs due to the presence of abnormal "*Phlegm*" in the stomach. *Phlegm* creates heartburn usually after a meal and at the beginning of gastric digestion.

There are several single and compound herbal treatments for *Horqat* in ITM. In this article, a novel treatment of GERD in Greek and Iranian traditional medicines called *Jovārish-e Jālīnūs* (Galen's digestive) has been introduced.

**Key words:** Gastro-esophageal reflux disease (GERD), Heartburn, Iranian traditional medicine (ITM), *Phlegm*, *Horqat*, *Jovārish-e Jālīnūs*

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Mahmoud Mosaddegh<sup>1</sup>

Meysam Shirzad<sup>2\*</sup>

Mohammad Bagher Minaii<sup>3</sup>

Mohammad Mahdi Ahmadian-Attari<sup>1</sup>

Alireza Abbassian<sup>3</sup>

Majid Anushiravani<sup>3</sup>

1-Department of Traditional Pharmacy, and Traditional Medicine and Materia Medica Research Center, School of Traditional Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

2-Department of Iranian Traditional Medicine, School of Traditional Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

3-Department of Iranian Traditional Medicine, School of Traditional Medicine, Tehran University of Medical Sciences, Tehran, Iran

#### Correspondence:

Meysam Shirzad

Department of Iranian Traditional Medicine, School of Traditional Medicine, Shahid Beheshti University of Medical Sciences; No.8, Shams Alley, Valie-asr Ave., Tehran, Iran  
shirzadmd@gmail.com



## Introduction

Despite a long history in the treatment of gastrointestinal diseases, the burden of gastro-esophageal reflux disease (GERD) is still significant.<sup>1</sup> GERD is one of the most common illnesses of the gastrointestinal tract with a large proportion of the population affected.<sup>2</sup> The economic burden of this ailment is considerable. Although hospitalization, days off work, and doctor care comprise a significant part of the expenses, medication is accounted for the major part of GERD-related costs.<sup>3</sup> For example, the cost of proton pump inhibitors (PPIs), a first-line therapy for GERD, is more than 10 billion dollars yearly in the United States. This is while two PPIs were reported as being among the top five selling pharmaceuticals in a 2006 study.<sup>4</sup>

GERD is defined as a “condition that develops when the reflux of stomach contents causes troublesome symptoms and/or complications.” Heartburn and regurgitation are accounted as the most prevalent GERD symptoms. Disease progression can lead to significant complications such as esophageal ulcer, esophageal stricture, Barrett’s esophagus, and esophageal adenocarcinoma.<sup>5</sup>

World Health Organization (WHO) encourages all countries to extend their complementary and traditional medicines and support practitioners in this field.<sup>6</sup> Nowadays, efforts to investigate new remedies in medicine have led to a committed movement toward the integration of traditional and complementary medicine into mainstream medicine.<sup>7-9</sup> Scientific studies have revealed that complementary and traditional medicines including Iranian Traditional Medicine (ITM) are efficient against gastrointestinal diseases.<sup>10</sup> Thus, much research on the role of complementary and alternative medicine in treating GERD has raised some hope for the introduction of new remedies.

Taking a glance at the history of medicine indicates that this condition was first described by Greek renowned physicians, especially Galen. However, the idea was developed significantly during the Medieval period by Muslim Persian physicians.<sup>11</sup>

During the Renaissance, medieval Persia had a significant influence on the contemporary medicine; this influence is still felt today. Having acquired the medical knowledge of ancient Greece, Egypt, India, and China, Persian practitioners carried out several experiments and criticized many scientific points.<sup>12,13</sup> They played their critical role in the history

- 1- Armstrong, 2005: 589-95.
- 2- Liu et al, 2011: 4429-33.
- 3- Willich et al, 2006: 371-6.
- 4- Shaheen et al, 2006: 2128-38.
- 5- Patrick, 2011: 116-33.
- 6- World Health Organization Traditional Medicine Strategy, 2002-2005, 2002: 43-47.
- 7- Rossi, 2010: 278-83.
- 8- Dooley, 2006: 648-52.
- 9- Lu et al, 2004: 1854-6.
- 10- Rahimi et al, 2010: 4504-14.
- 11- Elgood, 1991.
- 12- Khaleghi Ghadiri et al, 2004: 80-3.
- 13- Gorji et al, 2002: 510-5.



of medicine by the conservation, consolidation, coordination and development of ideas and knowledge in ancient civilizations. The theories of Hippocrates and Galen are well known and significantly discussed in Iranian Traditional Medicine (ITM) textbooks. The ITM physicians not only gathered existing medical information but also added to this knowledge their own astute observations and experimentation and introduced many new scientific theories.<sup>14,15</sup>

GERD also has been noticed by Persian foremost practitioners. They mentioned Galen's ideas and found several features of the disease such as clinical manifestations, diagnosis and treatment.

The principles of ITM are based on the existence of four liquid materials called "humours" including: "Phlegm or Balgham", "Yellow bile or *Safra*", "Black bile (Atrabile) or *Sawda*" and "Blood or Dam". These humours are normally produced by the liver and flow into blood vessels.<sup>16</sup> In abnormal conditions, the first three humours might be produced in the liver or out of that in several organs such as the brain, lung, joints or stomach. This abnormal form of material can trigger a process through which a disease appears.<sup>17</sup>

This study focuses on the humoral aspect of this condition, its diagnostic mechanisms as well as characteristics of an herbal compound mentioned in ancient medical literatures for curing this disorder.

### Materials and Methods

To obtain the best results from the history of medicine textbooks, the researchers, based on the humoral theory of medicine, have conducted a gross review of the history of medicine publications dealing with GERD signs and symptoms. In order to achieve certain clues related to the disease in the history of medicine, they had to scan the manuscripts dating back to ancient Greece. Therefore, the Greek physicians' compilations were evaluated. For instance, ideas of Hippocrates and Galen have been well-expressed and evaluated by Muslim Persian scientists such as Avicenna (Ibn Sīnā: 980–1037 A.D.), Rhazes (Al-Rāzī: 865–925 A.D.), Haly Abbas (Ali Ibn Al-Abbās-al-Majūsi: 949–982 A.D.) and Jorjāni (1042–1136 A.D.). Hence, traces of Greek scientists' ideas could be detected from later textbooks written by pioneer Muslim Hakims. To show this, in addition to the Aphorism written by Hippocrates, the most important Persian and Arabic medical textbooks belonging to the Islamic era were skimmed.

14- Ibid.

15- Gorji et al, 2001: 455-61.

16- Avicenna, 1025/2005.

17- Jorjani, 12th century/2001.



The Canon of medicine,<sup>18</sup> *Zakhireye Khārazmshāhi*,<sup>19</sup> *Sharh al-Asbāb va al-'Alāmāt*<sup>20</sup> and *Eksīr-e A'zam*,<sup>21</sup> four of the main ITM textbooks, were noticed to contain more detailed information about GERD-like conditions. In the next step, the possible equivalent disease to GERD, Horqat, along with its treatments were investigated in the above-mentioned resources. To accomplish this, closely related chapters to gastrointestinal diseases were examined through keywords such as regurgitation of sour material (*Joshā-e Hāmiz*), heartburn (*Horqat, laz'*) and inflammation (*Iltihāb*). *Jovārish-e Jālīnūs*, the compound noticed in this study, is mentioned several times as the drug of choice for GERD-like conditions. Finally, the ingredients of *Jovārish-e Jālīnūs*, a traditional medicine prescribed as the main treatment of Horqat, were determined and compared to herbal medicine and recent investigations in order to detect their scientific names as well as their mechanism of action.

### Results and Discussion

In the 6th section of Aphorism, the great ancient physician, Hippocrates pointed to acid eructations twice. Once in the first sentence of this section, where he pointed to the prognosis of chronic lientery because of the presence of newly-occurred acid eructations, and wrote: "In cases of chronic lientery, acid eructations supervening which did not occur before is a good sign".<sup>22</sup> This finding was later quoted by Avicenna in the Canon of medicine.<sup>23</sup> Hippocrates, later in the 6th aphorism, pointed to the relationship between acid eructations and predisposition to the pleurisy and wrote: "Those suffering from acid eructations are not very likely to be attacked by pleurisy".<sup>24</sup>

In the western new world, there are at least two scholars who tried to describe esophagitis: the first one is Boehm in 1722 who described an acute pain "which reached down even to the stomach and which was accompanied by hiccup and a constant flow of serum from the mouth". The second researcher is John Peter Frank who described esophagitis more properly in 1792.<sup>25</sup>

C. Rokitansky (1804–1878) was the first who associated gastric acid with diseases of the esophagus. He noted that peptic ulcer of the lower esophagus represented the aftermath of gastric juice in the gullet.<sup>26</sup>

Based on the conventional approach to symptomatology, the cardinal manifestations of GERD are heartburn and regurgi-

- 18- Avicenna, 1025/2005.
- 19- Jorjani, 12th century/2001.
- 20- Kermāni, 1446/2008.
- 21- Chishti, 1901/2008.
- 22- Hippocrates, 460BC/1959.
- 23- Avicenna, 1025/2005.
- 24- Parakrama et al, 2010.
- 25- Modlin, 2004: 390-402.
- 26- Hippocrates, 460BC/1959.



tation. Heartburn is the most common symptom of reflux disease. Heartburn, which is defined as “a burning feeling, arising from the stomach or lower part of the chest and radiating toward the neck”,<sup>27</sup> implies also the relationship between the heart and stomach.<sup>28</sup> In addition to heartburn, regurgitation (the casting up of incompletely digested food) and difficulty swallowing are common GERD symptoms.<sup>29</sup> “*Horqat*” is an important ailment of upper gastrointestinal tract in ITM manuscripts. The word “*Horqat*” lexically means burning sensation. This abnormality appears in the stomach when an injury is developed by abnormal humours, mostly Phlegm. Suffering from phlegmatic disorder, patients experience heartburn, especially after meal, and at the beginning of gastric digestion. This condition is alleviated once the stomach is emptied. In this case, most patients also suffer from belching along with regurgitation of sour material (*Joshā-e Hāmiz*).<sup>30</sup> The manifestations of phlegmatic *Horqat* such as heartburn and “sour belching” indicate that this condition and GERD are comparable. Therefore, different remedies prescribed for phlegmatic *Horqat* are probably applicable in GERD.

Among herbal drugs administered in *Horqat*, there is a formulation widely taken in different parts of Iran. This medicine is also noted under the title of *Jovārish-e Jālīnūs* (Galen’s digestive) in Greek medical manuscripts and later in ITM texts. For example, this medicine is mentioned as an effective therapy in treatises of Avicenna, Rhazes, and Chishti.<sup>31</sup> Moreover, there are a lot of ethnomedical, animal or clinical evidence emphasising the efficiency of most of the herbs existing in this compound. These studies introduce different mechanisms through which GERD signs and symptoms are subsided. These mechanisms include suppression of acid secretion, as well as anti-ulcer, anti-inflammatory, analgesic and anti-*H. pylori* activities (table 1).<sup>24-43</sup>

According to the above-mentioned studies, there is a great need for potent, selective and non-toxic medications for GERD. Traditionally used herbal medicines and their active ingredients are ideal starting points for biological target-oriented drug discovery efforts. Long history of the use of *Jovārish-e Jālīnūs*, from Galen era in ancient Greece to the present in Iran and India, and recent evidence on its effectiveness raise the possibility of the efficacy of this medicine in GERD.

- 27- Johnson et al, 2004: 660-4.
- 28- Shirzad et al, 2012.
- 29- Patrick, 2011: 116-33.
- 30- Kermāni, 1446/2008.
- 31- Chishti, 1901/2008.
- 32- Chitre et al, 2007: 215-7.
- 33- Zhang et al, 2010: 948-52.
- 34- Sakai et al, 1989: 215-7.
- 35- Belova et al, 1985: 17-20.
- 36- Banerjee et al, 2000: 21-24.
- 37- Rafatulah et al, 1993: 69-73.
- 38- Zaidi et al, 2012: 403-10.
- 39- Tanaka et al, 1989: 245-8.
- 40- Al-Howiriny et al, 2005:
- 41- Assimopoulou et al, 2005:
- 42- Hosseinzadeh et al, 2002:
- 43- Dang et al, 2011: 287-94.



**Table 1:** Characteristics and mechanisms of action of ingredients used in *Jovārish-e Jālīnūs*

Scientific name	Common name	Traditional name	Part used	Percent by Weight	Mechanism of action	References
<i>Aquilaria agallocha</i> Roxb	Agarwood	Ūod	Wood	1.35	Anti-inflammatory, Analgesic	32
<i>Alpinia officinarum</i> Hance	lesser galangal	<i>Khūlanjān</i>	Rhizome	1.35	Anti <i>H.pylori</i>	33
					Anti-acid secretion	34
<i>Asarum europaeum</i> L.	Wild ginger	<i>Asārūn</i>	Root	1.35	antiulcer, spasmolytic	35
<i>Aucklandia costus</i> Falc.	cape ginger	<i>Qost</i>	Root	1.35		
<i>Swertia chirata</i>	Chiretta	<i>Qasab ul-Zarira</i>	Inner materials of reeds	1.35	Anti-inflammatory, antiulcer	36
					,Anti <i>H.pylori</i>	37
<i>Cinnamomum cassia</i> Bl.	Chinese cinnamon	<i>Salikha</i>	Bark	1.35	Anti-inflammatory	38
					Antiulcer	39
<i>Cinnamomum zeylanicum</i> Nees	cinnamon	<i>Dārchini</i>	Bark	1.35		
<i>Commiphora opobalsamum</i> Engl.	-----	<i>Balsān</i>	Branch	1.35	Anti-ulcer, anti-acid secretion	40
					Antioxidant	41
<i>Crocus sativus</i> L.	Saffron	<i>Zaferān</i>	Stigma	1.35	Anti-inflammatory, antinociceptive	42
						43
<i>Cyperus rotundus</i> L.	Nut-grass	<i>So'd-e Kūfi</i>	Root	1.35	Anti-inflammatory	43
<i>Elettaria cardamomum</i> Maton	Cardamom	<i>Hil</i>	Fruit	1.35	Antiulcer	44
						45
<i>Emblica officinalis</i>	Indian gooseberry	<i>Āmla</i>	Fruit	1.35	Anti-inflammatory	46
						47
<i>Eugenia</i>						
<i>Caryophyllata</i> Thunb	Clove	<i>Qaranfol</i>	Receptacle	1.35	Anti <i>H.pylori</i>	48
						49
<i>Myrtus communis</i> L.	Myrtle	<i>Mūrd</i>	Fruit	1.35	Anti-inflammatory	49
<i>Nardostachys jatamansi</i> DC.	Indian Valerian	<i>Sonbol</i>	Arial part	1.35	Anti stress ulcer	50

- 44- Jamal et al, 2006: 149-53.  
 45- Sairam et al., 2002: 1-9.  
 46- Chatterjee et al, 2012:  
 47- Dang et al, 2011: 487380  
 48- Li et al, 2005: 329-33.  
 49- Zaidi et al, 2012: 403-10.  
 50- Lyle et al, 2009: 93-8.



Scientific name	Common name	Traditional name	Part used	Percent by Weight	Mechanism of action	References
<i>Piper longum</i> L.	Long pepper	<i>Dārfulfil</i>	Fruit	1.35	Antiulcerogenic	51
<i>Piper nigrum</i> L.	Black pepper	<i>Filfil-e Siāh</i>	Fruit	1.35		
<i>Pistacia lentiscus</i> L.	Mastic	<i>Mastaki</i>	Oleogum resin	3.37	Anti neutrophil activation of <i>H.pylori</i>	52
	Sugar	<i>Qande sepid</i>		25		
	Purified Honey	<i>Asale mosaffā</i>		50		

51- Agrawal et al, 2000: 994-8.

52- Choli-Papadopoulou et al, 2011: 2585-91.

### Conclusion

Based on the results of this study, although the terms gastroesophageal reflux disease or reflux esophagitis have been proposed in the recent century, the cardinal manifestations and clinical pattern were described by Greek, Persian and Arab physicians many years ago.

This ailment has been described and managed since the first periods of medical history. *Jovārish-e Jālīnūs* is known to be a commonly used medication in the treatment of Horqat in old history of this disorder. According to the several studies on the efficacy of the ingredients used in *Jovārish-e Jālīnūs*, this medication can be introduced as an adjuvant therapy for GERD. Hence, further studies on pharmacological and clinical aspects of this traditional formulation should be done to clarify the effectiveness of this medication in the treatment of GERD.

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