



## Research paper

# Traditional Iranian medicine: The use of the Canon of medicine by Avicenna to treat ascites



Jamileh Jafari Mahdavi<sup>a</sup>, Jale Aliasl<sup>b</sup>, Mohammad Javad Ehsani<sup>c</sup>,  
 Mohammad Kamalinejad<sup>d</sup>, Latif Gachkar<sup>e</sup>, Rasool Choopani<sup>a,\*</sup>

<sup>a</sup> Department of Traditional Medicine, School of Traditional Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>b</sup> Traditional Medicine Clinical Trial Research Center, Shahed University, Tehran, Iran

<sup>c</sup> Department of Gastroenterology and Hepatology, Taleghani Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>d</sup> School of Pharmacology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

<sup>e</sup> Tropical and Infectious Diseases Research Center, Shahid Beheshti University of Medical Science, Tehran, Iran

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## ABSTRACT

**Introduction:** Ascites is a common problem in clinical medicine, which may be the initial manifestation of a systemic disease such as heart failure or cirrhosis, or may appear without any obvious underlying disease. Drug treatments, including diuretics have been associated with many side effects, and non-drug treatments such as paracentesis and liver transplantation, apart from a high economic burden, are associated with many problems. The aim of this study was to explore the potential non diuretic therapies that could be used for the treatment of ascites using the ancient canon of medicine by Avicenna.

**Methods:** The Canon of Avicenna, a famous Iranian medicine text (980–1037 AD) was comprehensively searched and the etiology, signs and symptoms and treatment of ascites were identified.

**Results:** The theories and treatments found in the Avicenna, Canon of Medicine suggests that it can be used for the treatment of ascites, including; the treatment of underlying disease, reducing the ascites fluids using diuretics and non-diuretics and also by providing a hepatoprotective effect which can improve liver function by using life style modification and dietary intervention.

**Conclusions:** Considering the high prevalence and burden of diseases causing ascites, familiarity with the steps using Avicenna treatment can be valuable and useful in the treatment of ascites, especially for cirrhotic patients. Confirmation of its use will need clinical trials.

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## 1. Introduction

Ascites is defined as the accumulation of free fluid in the peritoneal cavity [1,2]. Ascites might be due to various medical conditions that damage organs in the peritoneum, including liver failure, or organs that are located away from the peritoneum, such as heart or kidney failure, or conditions that result in hypoproteinemia [1]. Ascites, aside from the underlying cause, is associated with considerable morbidity in the affected individual due to abdominal distension, respiratory distress, and formation of hernias, especially around the umbilicus, malnutrition, and increased susceptibility to infection [3–5]. These complaints

contribute to frequent hospitalization and markedly impair the quality of life of ascitic patients [2].

Liver malfunction is the most common source for ascites [6]. Hepatic causes of ascites may include hepato-cellular failure or portal venous hypertension [6]. Hepatocellular damage is usually caused by long-term alcohol consumption, hepatitis C, hepatitis B, autoimmune hepatitis, nonalcoholic fatty liver disease, drugs and toxins, tumors of the liver or biliary ducts illness and heart disease [7,8]. Each of these conditions are highly prevalent [9]. Cirrhosis is associated with high mortality and morbidity [7,10]. There is no definite medication for cirrhosis and treatment strategies are only for reducing the symptoms of disease [11].

Ascites is one of the primary complications of cirrhosis. During the course of cirrhosis, ascites develops in 30–50% of patients within 5–10 years [12] and is associated with 50% mortality after establishment [13]. Gradual distension of abdomen due to ascites may be accompanied by a feeling of stretching in flanks or thighs or a vague pain in the back. Other associated symptoms are dyspepsia, heartburn, dyspnea, orthopnea, tachycardia, pleural effusion and

\* Corresponding author at: Department of Traditional Medicine, Shahid Beheshti University of Medical Sciences, P.O. Box 1516745811, Tehran, Iran. Fax: +98 21 8877 6027.

E-mail address: [Rchoopani@yahoo.com](mailto:Rchoopani@yahoo.com) (R. Choopani).

umbilical hernia [14]. Therefore, ascites significantly affects the quality of life. The primary goal of therapy in patients with ascites is to relieve their symptoms. Diuretics are administrated to minimize the ascetic fluid volume and paracentesis is performed to manage refractory ascites, while other new therapeutic drugs, such as albumin infusion and vasopressin receptor antagonists, are being used to decrease peripheral edema [12] and liver transplantation is indicated in severe liver failure [15]. Drug treatments, including diuretics have been associated with many side effects [16] and non-medical treatments, including paracentesis and liver transplantation, has a high economic burden, and is associated with many complications [8,15]. In Iranian traditional medicine, the liver is a very important organ and is known as one of the main parts of the body [17]. Liver conditions such as ascites have been the center of attention of ancient physicians especially Avicenna. The aim of this study was to investigate the causes, signs, and symptoms of ascites in Avicenna manuscripts to find a new opportunity towards curing this condition.

**2. Methods**

Avicenna (980–1037 AD) is one of the famous physicians who is known as “the prince of physicians” in the west and is the author of The Canon of Medicine [18]. The Canon of medicine, is considered as an important reference book in Iranian traditional medicine [19]. The original book is in Arabic, but it is also translated into English. This book consists of five parts, including principles of traditional medicine, singular drugs, combined drugs and identification of diseases and ways to cure them. In the Canon, liver diseases are described as Estesgha [20] and include three types: fleshy (Lahmy), ascites (Zaghi) and drum (Tably). In this paper Estesgha Zaghi is only assessed. In this study, Arabic and English

versions of the Canon of medicine were assessed to identify the suggested treatments for ascites.

**3. Results**

Based on the Canon book, management of ascites is categorized into lifestyle modification, dietary intervention and administration of medicinal foods. In this review the Canon recommendations are compared with the modern medicine recommendations for ascites.

*3.1. Definition and etiology*

When the digestive ability of the liver is weakened, food is not digested and viscid moisture that is produced cannot be absorbed into the target organs and as a result enters the connective tissue. Avicenna highlighted the inflammation of kidneys and liver can lead to ascites because when these two organs get weak, fluid cannot be separated from the blood. Therefore, the blood volume increases progressively and accumulates in inter-tissue spaces and abdominal empty space [20].

*3.1.1. Lifestyle modification*

Avicenna had a multiple therapy approach in the treatment of ascites. The first strategy was to treat the underlying condition followed by reduction of ascetic fluids [20]. He used the following methods to reduce the ascetic fluid in his patients; sitting under the sun for the thirsty patient, exercise to the extent of strength, dry sauna and to dry sweat with cloth to maintain regular perspiration. Other prescribed activities by Avicenna were bathing in sea water or sulfur springs.

**Table 1**  
Avicenna viewpoints about ascites.

Description	Etiology	Symptoms	Treatment
Water is collected between peritoneum	<ul style="list-style-type: none"> <li>- Drinking very cold water for a long time especially at midnight, immediately after bathing, after heavy exercise, and after intercourse</li> <li>- Severe bleeding for example during periods or from hemorrhoids</li> <li>- Liver diseases (inflammation and bill duct obstruction and canalicules)</li> <li>- Spleen diseases</li> <li>- Stomach diseases</li> <li>- Lung failure</li> <li>- Renal failure</li> <li>- Amenorrhea (uterine diseases impair the activity of liver and gradually lead to weakness and failure of liver)</li> </ul>	Pitting edema <ul style="list-style-type: none"> <li>- Enlarged the abdomen</li> <li>- Stretched abdomen skin</li> <li>- Movement water from side to side</li> <li>- Edema in upper and lower extremities</li> <li>- Eyelids edema</li> <li>- Hydrocele</li> <li>- Respiratory symptoms such as coughing and dyspnea</li> </ul>	Dietary <ul style="list-style-type: none"> <li>- Eating small amounts of food</li> <li>- Consumption of soft foods and useful diet for liver</li> <li>- Reducing water consumption and patience on thirst</li> </ul> Recommendations for reduce Ascites fluid <ul style="list-style-type: none"> <li>- Drying (by siccative)</li> <li>- Sitting in the sun</li> <li>- Opening Masam (skin pores) for increasing sweat</li> <li>- Exercise</li> <li>- Multiple diuretics</li> </ul> Liver and body tonic <ul style="list-style-type: none"> <li>- Aromatic stuffs</li> <li>- Enjoyable scents</li> <li>- Enjoyable and strong smell of foods</li> <li>- Hepatoprotective</li> </ul> Paracentesis treatment of underlying diseases

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