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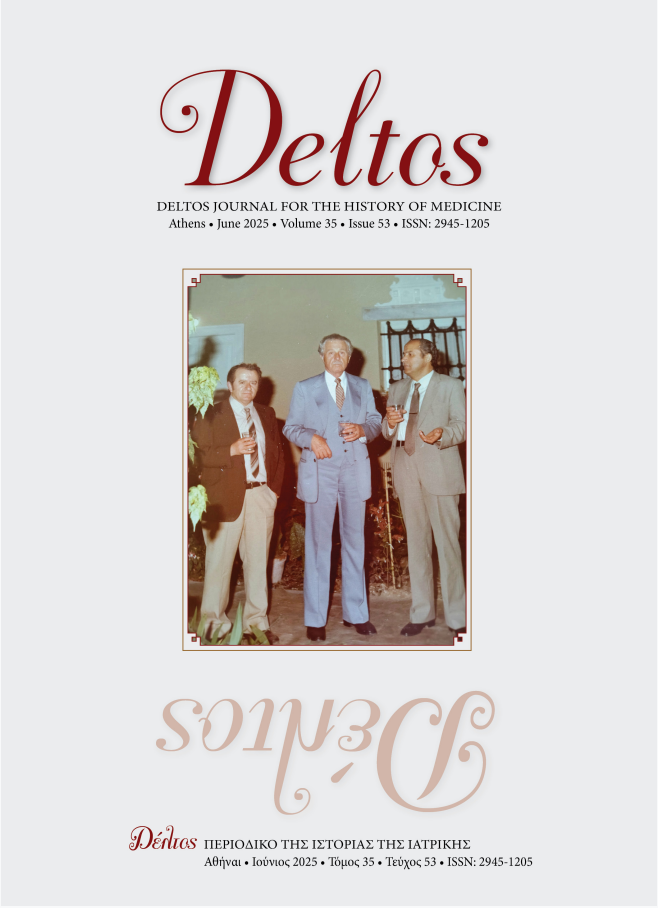

Herbal Wisdom and Practical Solutions: A Comparative Study of Abdominal Pain and Acute Intestinal Obstruction Treatments in versified Ibn Tufail's Al 'Urjuzah Fi Al Tibb and Other Classical Islamic Medicine Texts with emphasis on Posology

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Herbal Wisdom and Practical Solutions: A Comparative Study of Abdominal Pain and Acute Intestinal Obstruction Treatments in versified Ibn Tufail's Al 'Urjuzah Fi Al Tibb and Other Classical Islamic Medicine Texts with emphasis on Posology

Mouhssine Adnane[1], El Bachir Benjelloun[1]

Figure 1. View of Al Urjuza Fi Tibb by Ibn Tufail preserved at the library of Al Quaraouiyine University in Fez.

Introduction

From the ninth to the nineteenth century, didactic poetry in the Islamic world encompassed a wide array of subjects, including theology, Qur'ānic studies, jurisprudence, history, logic, algebra, medicine, and agriculture. These poetic forms were crafted to engage audiences while effectively preserving and transmitting knowledge. Medieval Arabic poetry also explored the ethical, social, and humanitarian dimensions of medical care, as seen in works like the 13th-century bibliographic encyclopaedia by Ibn Abi Usaibia, which contains numerous quotations reflecting these themes.

Among the notable works of medieval Arabic medical poetry, Ibn Tufail's *Al 'Urjuzah Fi Al Tibb (Fig. 1)*, preserved in the Al-Qarawiyyin library in Fez (Fig. 2), stands out for its comprehensive approach to medical treatments. This poem presents detailed recipes and therapeutic strategies, particularly addressing the treatment of abdominal pain and acute intestinal obstruction.

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Note: The translation of Arabic verses into English was provided by the author

Additionally, this analysis will explore the concept of posology - the science of drug dosage - which is essential for understanding appropriate treatment dosages. Posology has played a crucial role in refining medical practices, yet it has faced challenges, including variability in measurement units and the evolution of these standards over time.

Material:

Ibn Tufail, a prominent Arab Muslim philosopher, scientist, and physician, made significant contributions across various fields, including philosophy, literature, mathematics, astronomy, and medicine. His diverse career path included roles such as a clerk in the governor's office in Granada, as well as minister and private physician to Sultan Abu Yaaqub Yusuf. Renowned for his medical expertise and his close association with fellow scholar Ibn Rushd, Ibn Tufail passed away in Marrakesh in 581 AH / 1185 AD, leaving behind a legacy of invaluable works.

His contributions to medicine have been documented by historians such as Lisan al-Din Ibn al-Khatib and Ibn Abi Usayba'a, who highlighted his proficiency in anatomy and surgical procedures (Ibn Abi Usaybi'a, ʿUyūn al-Anbāʾ fī Ṭabaqāt al-Aṭibbāʾ, Cairo edition, 1965). Ibn Tufail's extensive medical knowledge is evident in his two-volume treatise, which includes an essay composed of 7777 verses of clear Rajaz, as defined by classical Arab scholars; this holds a dual significance: it is both an ancient poetic genre and one of the sixteen recognised metrical patterns (buḥūr) in Arabic prosody. As a poetic form, Rajaz is notable for its simplicity, brevity, and oral appeal - often improvised by Bedouins in contexts like war chants and camel-driving songs. Structurally, it is unique for consisting of single-line verses, which distinguishes it from the two-line format of most other Arabic poetic forms. As a metrical pattern, it is the seventh in the classical system of Arabic meters, valued for its rhythmic clarity and suitability for educational and didactic content. These characteristics made Rajaz an ideal vehicle for scientific and medical expression, facilitating memorisation and transmission of complex information. This work, preserved in the Al-Qarawiyyin library in Fez under the number 1969, meticulously outlines the diagnosis, causes, and treatment of various diseases, focusing on ailments from the head to the knees.

Figure 2. View of the library of Al Quaraouiyine University in Fez.

The treatise is organised into seven chapters, each addressing different aspects of health and disease. Notably, the fourth chapter is dedicated to diseases of the digestive system.

Method:

This study is grounded in a detailed examination of the fourth section of Ibn Tufail's medical poem, *Al ʿUrjuzah Fi Al Tibb (Ibn Tufail, Al-ʿUrjūzah fī al-Ṭibb, MS Al-Qarawiyyin Library, Fez, no. 1969)*, which offers a comprehensive overview of diseases affecting the digestive system. In this segment, Ibn Tufail meticulously categorises and discusses various hepatic and gastrointestinal conditions across 28 distinct chapters, addressing pathologies such as hepatic insufficiency, hepatic tumours, calcification, ascites, jaundice, and a variety of splenic disorders.

A significant focus of this section is the exploration of colic, a form of intense abdominal pain, alongside its therapeutic management. Ibn Tufail also addresses the condition known as Ayloush, which aligns with the modern understanding of acute intestinal obstruction. His work provides an in-depth account of the aetiology, clinical manifestations, and treatment strategies for these conditions, reflecting a sophisticated grasp of gastrointestinal pathology.

We concentrated specifically on the chapters that pertain to colic and acute intestinal obstruction. Through a thorough analysis of Ibn Tufail's descriptions and treatment protocols, we aimed to draw meaningful parallels between his historical medical practices and contemporary clinical approaches. The therapeutic interventions proposed by Ibn Tufail - including herbal formulations, dietary modifications, and targeted therapeutic procedures -were critically evaluated for their relevance and potential applicability in modern medicine. By contextualising these methodologies within the broader framework of contemporary healthcare, we aspire to illuminate the enduring legacy of Islamic medicine in addressing abdominal conditions.

Results

1. Abdominal pain and its treatment according to Ibn Tufail

Abdominal pain, a common medical complaint, manifests as discomfort or distress in the abdominal region, spanning from the lower chest to the pelvic area. Its aetiology varies widely, with gastroenteritis and inflammatory conditions of the digestive system ranking among the most prevalent causes. However, certain instances of abdominal pain necessitate urgent medical attention, such as in cases of acute appendicitis, ruptured aortic aneurysm, or ectopic pregnancy.

Diagnosing the underlying cause of abdominal pain poses a considerable challenge due to the overlapping symptoms and manifestations across different pathologies. Despite this complexity, Ibn Tufail offered insightful observations regarding abdominal pain, characterising it as severe in nature and primarily involving the intestines. He noted potential accompanying symptoms such as diarrhoea or thirst, implicating disturbances in bile function as a contributing factor.

Ibn Tufail's approach to the treatment of abdominal pain centred on addressing the underlying disorder within the digestive system. By identifying bile dysfunction as a key element in the pathogenesis of abdominal pain, he sought to restore balance and alleviate symptoms through targeted therapeutic interventions.

Ibn Tufail then talked about the treatment of abdominal colic, describing herbs and medicines with different specific amounts depending on the presence or absence of other symptoms such as diarrhoea or thirst, and he detailed them precisely in these verses:

English Translation	Arabic Verse from Al 'Urjuzah Fi Al Tibb
I prescribed **two dirhams** for ingestion, Of psyllium, post two thorough cleanses.	نيتلسغ دعب انوطق رزب **نيمهرد** برشي نأ ترمأ
A dirham's weight of purslane seeds advised.	ةلجرلا رزب نزولاب **امهردو**
With **a dirham** of roses, healing supplied.	ةلعلا اذ بر وهف درو **مهردو**
Let cool, pure water quench the fire, For it provides relief, as health grows higher.	دراو اعفن ديفي هنإف ادراب احارق ءاملا نكيلو
A spoonful of Aniseed, gently warm.	فرح بح ةقلعم هقساف
In water, ease provided, a gentle charm.	فطلب عفان ءام نخسب لاهسإ الب صغم نكي نإو
Two dirhams per letter, the dosage precise.	اين افرح **نيمهرد رادقم** لاحلا نم اضيأ هتيقس
Ensuring potency, yet without overprize.	ايوق نوكي ال ضر دعب نم

2. Acute Intestinal obstruction

Acute intestinal obstruction presents a significant medical challenge characterised by the mechanical or functional blockage of the intestine, impeding the normal flow and movement of intestinal contents. Recognised as a medico-surgical emergency, acute intestinal obstruction demands prompt intervention to prevent serious complications. In his medical writings, Ibn Tufail provided valuable insights into the concept of Ilawush, which corresponds to ileus in modern medical terminology. He defined it as an obstruction of the small intestine caused by various factors such as tumours, accumulated phlegm, hardened stool or excrement, blood from the stomach, or an abnormal mixture of bile, either cold or hot in nature.

Moreover, Ibn Tufail elucidated treatment strategies tailored to each subtype of ileus, emphasising the importance of targeted interventions to alleviate obstruction and restore normal intestinal function. The treatment modalities prescribed by Ibn Tufail likely encompassed a combination of medical and surgical interventions aimed at relieving the underlying obstruction and mitigating associated symptoms.

English Translation	Arabic Verse from Al 'Urjuzah Fi Al Tibb
Administer to him everything, along with a **mithqal of** Iraj, as drinking it, akin to kohl, brings soothing sway.	لاثملا يف لحكلاك ايارج **لاقثم** عم عيمجلا هقساو
Prepare an **enema** of barley, its skin meticulously peeled.	روشقم هرشق نم ضضرم ريعش نم **ةنقحلا** هل عنصاو
Cooked within fat, its essence revealed.	نهدلاب اهلك خبطت
Mix it seamlessly with grease, in the **enema's** blend.	نقحلا دنع موحشلاب هطلخاو
Administering diligently, to ensure the ailment's end.	للم نود **ةنقحلا** دواعو
Repeat the enema without faltering, with patience in accord, letting each dose be **half a pound**, ensuring its benefit.	**لطر فصن** ةنقحلا نكتلو

3. In Ibn Tufail's approach to the treatment of abdominal colic and acute intestinal obstruction

He advocated for a multifaceted therapeutic regimen comprising medications, dietary interventions, and specific beverages. Through his meticulous prescriptions, Ibn Tufail aimed to address the underlying pathology while providing symptomatic relief. The following are the key components of his treatment protocol:

Table 2. Herbs and medicines described in Ibn Tufail's URJUZA (poem) and their scientific names.

Name of the medicine/plant	Definition	scientific name
الانخونة **Ajwain** (Bairwa, Ranjan et al. "Trachyspermum ammi." Pharmacognosy reviews vol. 6,11 (2012), p. 56).	Ajwain is a plant also known as **ajowan caraway**, and royal cumin. It is an annual herb in the family Apiaceae that does not exceed 50 cm in height. Both the leaves and the seed-like fruit of the plant are consumed by humans.	Trachyspermum ammi
القنطريون **holy thistle** (Vasile B. "Centaurea benedicta L.: A Review of Its Ethnopharmacological and Phytochemical Properties," Journal of Medicinal Plants Research 4.23 [2010], pp. 2351–2357).	Cornflower is an herbaceous plant from the gentian family. It grows wild from 10 to 30 cm tall. Its shape is rectangular or lanceolate. The lobes are rectangular and triangular, and their edges are serrated and thorny.	Centaurea Benedicta
البزرقطونة **black psyllium** (Giacosa, Attilio, and Mariangela Rondanelli. 44 Suppl 1 (2010): S58-60).	Plantago ovum is a soluble fibre derived from the seed husks of the plantain plant.	Plantago psyllium
الرجلة الذبل **little hogweed** (Fawzy Z.F., "Purslane (Portulaca oleracea): An Overview of its Nutritional and Medicinal Properties," Journal of Nutritional Science 6 [2017], e34).	Pursley seeds are the seeds of the vegetable Purslane, also known as watercress.	Portulaca oleracea
الكمون **Cumin** (Sharma, R., et al. "Cuminum cyminum: Antioxidant and Anti-inflammatory Properties," International Journal of Plant Sciences 182.5 [2021], pp. 555–560).	Cumin is an annual herbaceous plant with limited growth, reaching a height of 30-40 cm. Its leaves are compound, thin, dark green in colour, and the plant bears small white flowers.	Cuminum cyminum
Golden shower (Khan M.A., et al. "Medicinal Uses of Cassia fistula: A Phytopharmacological Review," Phytomedicine [2017])	Shanbar is a semi-leafed plant from the leguminous family.	Cassia fistula
الكاكنج **Alkekengi** (Zhou Y., et al. "Ethnopharmacological Uses of Physalis alkekengi," *Journal of Natural Products* 85.7 (2022): 1120–1128)	The kakang is a wild herbaceous plant from the Solanaceae family. It reaches a height of 20-60 cm with alternating petiolate leaves. Its flowers are small, axillary-shaped, white, and its nuclear fruits are purple.	Physalis Alkekengi L
الحبة الحلوة **Aniseed** (Ahmad M., et al. "An Updated Review on the Pharmacological Properties of *Pimpinella anisum*." *Journal of Herbal Pharmacotherapy* 20.2 (2020): 145–152)	Aniseed: Sweet bean, or fennel, is a herbaceous plant that contains a lot of volatile oils.	Pimpinella Anisum
الصندل ***Santalum*** (Al-Asmari A.K., Athar M.T., Kadasah S.G. "Antioxidant and stress modulatory efficacy of essential oil extracted from Santalum album L.," Industrial Crops and Products 133 [2019], pp. 244–252).	The sandalwood is a parasitic plant, its height ranges between 8-10 m. It parasites on nearby trees and attaches to them.	Santalum
الحلبة **Fenugreek** (Ulbricht C., Basch E., et al., "Fenugreek (Trigonella foenum-graecum L.): An Evidence-Based Systematic Review," Journal of Herbal Pharmacotherapy 7.3–4 [2007], pp. 143–177).	Fenugreek is an annual plant of the genus Fenugreek, belonging to the leguminous family.	Trigonella foenum-graecum
الكرفس **Celery** (Al-Asmari A.K., Athar M.T., Kadasah S.G., "An Updated Phytopharmacological Review on Medicinal Plant of Arab Region: Apium graveolens Linn.," Pharmacognosy Reviews 11.21 [2017], pp. 13–18).	Celery is a type of plant in the celery genus of the Apiaceae family. Celery is a vegetable whose stalk and leaves are eaten raw or cooked.	Apium graveolens

Discussion:

Treating abdominal pain (colic) and acute intestinal obstruction was a primary concern for ancient and Islamic physicians, and they provided several remedies based on herbs and natural preparations, also posology (the study of dosing) was a critical aspect of treatment. Physicians like Ibn Tufail, Ibn Sina, Al-Razi, and others paid close attention to the proper dosage of medicinal herbs, ensuring both safety and efficacy. However, the units of measurement and methods of prescribing doses were quite different from what we use today.

Common Units of Measurement in Islamic Medicine:

1. Mithqal (لاقثم):

- The mithqal was a common unit for measuring weight in medieval Islamic medicine, roughly equivalent to 4.25 grams. Physicians often prescribed doses in mithqal for potent medicines or complex herbal mixtures.

2. Dirham (مهرد):

- Another widely used unit, the dirham, was approximately 3 grams. It was often used for less potent substances or when combining various ingredients in a formula. Several dirhams could be prescribed in mixtures.

3. Qirat (طاريق):

- The qirat, equivalent to about 0.2 grams, was a smaller unit used for particularly potent or concentrated drugs, where precise measurement was critical to avoid side effects or toxicity.

4. Ratls and Oukiyyas:

- These were larger units. The **ratl** (equivalent to approximately 406 grams) and the **oukiyya** (approximately 30 grams) were used for measuring liquids or bulkier items. Ratls were used when preparing large amounts of liquid medicines, such as syrups or decoctions.

Posology in Islamic medicine was not rigid but was often adjusted based on several factors:

- **Age**: Children were prescribed lower doses than adults, typically halving the amount.
- **Constitution**: Stronger constitutions were given higher doses, while weaker individuals received smaller amounts.
- **Season**: In colder weather, higher doses of "warming" herbs like ginger or cinnamon might be given, while cooling herbs were prescribed in the summer.
- **Patient's response**: Dosages could be adjusted based on how the patient responded to the initial dose.

1. Treatment of abdominal pain or colic:

1. Ibn Sina (Avicenna: 980 – 1037 CE) – The Canon of Medicine (Ibn Sina, Al-Qānūn fī al-Ṭibb [The Canon of Medicine], trans. O. Cameron Gruner, AMS Press, 1970):

For abdominal pain or colic, Ibn Sina often prescribed carminative (gas-relieving) herbs and warming substances to relax the intestines and relieve pain. He carefully tailored the dosages to avoid overstimulation of the digestive system.

- **Dosage for Colic**:
  - Ibn Sina recommended **fennel** or **anise** for digestive relief. The typical dose was around **1-2 dirhams** (3-6 grams) of ground seeds, often taken as a tea or decoction.
  - For stronger substances, such as **myrrh** (known for its antispasmodic effects), he might recommend **1 mithqal** (approximately 4.25 grams), diluted in water or another liquid.
- **Administration**:
  - The herbs would usually be prepared as an infusion or decoction (boiled in water), and the patient would drink this multiple times throughout the day.
  - In more severe cases, Ibn Sina suggested combining these herbs with a mild **purgative** (laxative) to clear the intestines, particularly in cases of colic caused by constipation or obstruction.

2. Al-Razi (Rhazes: 865 – 925 CE) – Al-Hawi (Al-Razi, Al-Ḥāwī [The Comprehensive Book on Medicine], trans. H.M. Said, Karachi: Hamdard National Foundation, 1969):

Al-Razi, in his comprehensive work, recommended remedies that would soothe spasms in the intestines. He often used a combination of **fennel**, **cumin**, and **coriander** to relieve colic.

- **Dosage for Colic**:
  - **Cumin seeds**: A typical dose would be **2-3 dirhams** (6-9 grams) ground into a fine powder and taken with warm water or milk.
  - **Coriander seeds**: Often recommended at a dose of **1 dirham** (3 grams) to reduce bloating and ease abdominal cramping.

- **Administration**:
  - Like Ibn Sina, Al-Razi preferred decoctions or powders mixed in water. These would be drunk **two to three times a day** until symptoms subsided.
  - For more severe pain, he might prescribe stronger substances like **pepper** or **ginger**, with careful attention to dosage, using **qirats** (0.2 grams) for these more potent spices.

3. Ibn Al-Baitar (1197 – 1248 CE) – The Comprehensive Book on Simple Drugs and Foodstuffs (Ibn Al-Baitar, The Comprehensive Book on Simple Drugs and Foodstuffs, trans. A.E.J.H. and T.N.R., American University in Cairo Press, 2001):

Ibn Al-Baitar was known for his extensive work on herbal remedies, and he offered detailed descriptions of dosages for various herbs used to treat colic.

- **Dosage for Colic**:
  - **Fenugreek** was a popular remedy, and he often prescribed **2 dirhams** (6 grams) of fenugreek powder, mixed with oil or honey, to relieve abdominal discomfort and cramps.
  - For treating more severe intestinal spasms, he recommended **peppermint** at a dose of **1 mithqal** (4.25 grams) in a decoction or powder.
- **Administration**:
  - Fenugreek was commonly boiled in water and drunk as a **tea**. Peppermint, being cooling and soothing, was often combined with a bit of honey and taken **twice daily**.
  - In more complex prescriptions, Ibn Al-Baitar might mix multiple herbs and adjust the doses based on the patient's constitution, using **qirat** (0.2 grams) measures for potent herbs like **cinnamon** or **cardamom**.

4. Ibn Rushd (Averroes: 1126 – 1198 CE) – Kulliyat fi al-Tibb (الكليات في الطب) (Ibn Rushd, Kulliyāt fī al-Ṭibb, trans. S. A. Al-Yaqubi, Dar al-Kutub al-Ilmiyah, 1995):

- In *Kulliyat fi al-Tibb*, Ibn Rushd discusses general principles of medicine, including dosage and units of measurement. He also refers to **dirhams** and **mithqals** for prescribing various treatments.
- **Example**: For intestinal pain or colic, Ibn Rushd recommended **ginger** in **qirat** units (0.2 grams) for potent remedies and **dirhams** for milder treatments. His work often emphasises adjusting doses based on the individual patient's needs and constitution.

5. Dawud al-Antaki (Died in 1599 CE (Date of birth uncertain, often estimated mid-16th century)– Tadhkirat Uli Al-Albab (تذكرة أولي الألباب) (Dawud al-Antaki, Tadhkirat Uli al-Albāb [The Memoir of the Men of Understanding], trans. M. Al-Khalidi, Dar al-Kutub al-Ilmiyah, 2009):

In this text, Dawud al-Antaki describes many treatments for gastrointestinal disorders, including colic, with reference to the use of **mithqal** and **dirham** units for precise dosing.

- **Example**: For abdominal pain, he prescribed **coriander** at **1-2 dirhams** and often combined it with other herbs like fennel to relieve cramping and colic.

6. Al-Zahrawi (Abulcasis: 936 – 1013 CE) – Kitab al-Tasrif (كتاب التصريف لمن عجز عن التأليف) Al-Zahrawi, Kitāb al-Taṣrīf [The Book of Medical Administration], trans. N.K.M. al-Ghazali, Dar al-Kutub al-Ilmiyah, 2005):

In his encyclopaedic work *Kitab al-Tasrif*, Al-Zahrawi includes numerous references to the appropriate dosage of medicinal herbs for various ailments, including abdominal pain and digestive issues.

- **Example**: He often used **mithqal** for stronger remedies and **dirhams** for general herbal prescriptions like fennel or cumin to treat colic and gastrointestinal disorders.

Below is a comprehensive table that compares the posology (dosage) and units of measurement used by prominent Islamic physicians for treating abdominal pain or colic. The table summarises the herbal remedies, dosages, and units of measurement as prescribed by these physicians, reflecting the detailed discussion above.

1. Dosage Precision:
   - **Similar Units**: All physicians used traditional weight units such as **dirhams** and **mithqals**, but Ibn Tufail demonstrated exceptional precision in dosage with clear instructions, similar to his peers. His specific use of 2 dirhams for various remedies mirrors the cautious approach seen in other physicians, aiming for balance between effectiveness and safety.
   - **Tailored Doses**: Ibn Tufail stands out for tailoring the dosage based on the presence or absence of symptoms such as diarrhoea or thirst. This reflects a more individualised treatment strategy, showing a nuanced understanding of symptom variation and its role in guiding therapy.

Table 3. Posology of Abdominal Pain Treatments in Classical Islamic Medicine.

Physician	Text	Remedy/Herb for Abdominal Pain	Dosage	Unit of Measurement	Administration
Ibn Sina (Avicenna)	*The Canon of Medicine* (القانون في الطب)	Fennel, Anise	1-2 **dirhams**	**Dirham** (≈ 3 grams)	Decoction/Infusion, taken 2-3 times daily
		Myrrh	1 **mithqal**	**Mithqal** (≈ 4.25 grams)	Diluted in water or liquid, as needed for pain relief
Al-Razi (Rhazes)	*Al-Hawi fi Al-Tibb* (الحاوي في الطب)	Cumin seeds, Fennel	2-3 **dirhams**	**Dirham** (≈ 3 grams)	Ground into powder, mixed with water or milk
		Coriander seeds	1 **dirham**	**Dirham** (≈ 3 grams)	Powder or decoction, taken 2-3 times daily
Ibn Al-Baitar	*Kitab Al-Jami'* (الجامع لمفردات الأدوية والأغذية)	Fenugreek	2 **dirhams**	**Dirham** (≈ 3 grams)	Boiled as tea, combined with oil or honey
		Peppermint	1 **mithqal**	**Mithqal** (≈ 4.25 grams)	Decoction or powder mixed with honey, taken 2 times daily
Ibn Rushd (Averroes)	*Kulliyat fi al-Tibb* (الكليات في الطب)	Ginger	1-2 **qirats**	**Qirat** (≈ 0.2 grams)	Powder or decoction, used cautiously due to potency
			1 **dirham**	**Dirham** (≈ 3 grams)	In milder treatments, combined with other herbs
Dawud al-Antaki	*Tadhkirat Uli Al-Albab* (تذكرة أولي الألباب)	Coriander	1-2 **dirhams**	**Dirham** (≈ 3 grams)	Decoction, taken for digestive discomfort
Al-Zahrawi (Abulcasis)	*Kitab al-Tasrif* (كتاب التصريف لمن عجز عن التأليف)	Fennel, Cumin	1-2 **mithqals**	**Mithqal** (≈ 4.25 grams)	Decoction or powder, mixed in warm water
		Ginger, Cinnamon	0.5-1 **qirat**	**Qirat** (≈ 0.2 grams)	Added to decoctions, due to potency
Ibn Tofail	*Al 'Urjuzah Fi Al Tibb* (أرجوزة في الطب)	Psyllium, Purslane seeds, Rose water	1-2 dirhams	Dirham (≈ 3 grams)	Decoction with water for colic, taken 2 times daily
			1-2 dirhams	Dirham (≈ 3 grams)	Warm infusion, mixed in water, for pain without diarrhoea

2. Acute abdominal obstruction

a- Medical treatment

Below is a comparison focused on the treatment of **acute abdominal obstruction** (known as "ilawech" in traditional medicine) by Islamic physicians, including the remedies, dosages, and units of measurement they used.

Ibn Tufail's approach to treating acute intestinal obstruction differs notably from that of his peers by focusing on a **mechanical solution** using enemas and larger doses, as opposed to the more common use of purgative herbs. His remedies show a practical and aggressive intervention strategy designed to clear obstructions swiftly. This makes his work stand out in the broader scope of Islamic medical traditions, offering a distinctive and methodical way of addressing a serious condition.

1. Use of Purgatives:

- Across the board, **purgatives** were commonly prescribed for treating acute intestinal obstruction, with many physicians recommending herbs such as **senna**, **aloe**, and **castor oil** for their laxative properties. Both Ibn Sina and Al-Zahrawi favoured senna for its mild action, while Ibn Al-Baitar and Ibn Rushd also emphasised the use of castor oil and colocynth in severe cases.
- **Ibn Tufail**, however, diverged slightly by not using these typical purgatives as the first line of treatment. Instead, he proposed **barley Enemas mixed with fat and grease**, a more mechanical

Table 4. Posology for Acute Abdominal Obstruction (Ilawech).

Physician	Text	Remedy/Herb for Acute Abdominal Obstruction (Ilawech)	Dosage	Unit of Measurement	Administration
Ibn Sina (Avicenna)	*The Canon of Medicine* (القانون في الطب)	Senna leaves (mild purgative)	3-5 **dirhams**	**Dirham** (≈ 3 grams)	Boiled into decoction, taken once daily to relieve blockage
		Castor oil (stronger purgative)	1-2 **mithqals**	**Mithqal** (≈ 4.25 grams)	Mixed with water or honey, taken in severe cases
Al-Razi (Rhazes)	*Al-Hawi fi Al-Tibb* (الحاوي في الطب)	Colocynth (bitter apple)	0.5-1 **qirat**	**Qirat** (≈ 0.2 grams)	Strong laxative, powdered and mixed with water
		Aloe (purgative and anti-inflammatory)	2-3 **dirhams**	**Dirham** (≈ 3 grams)	Decoction, taken with honey to ease intestinal obstruction
Ibn Al-Baitar	*Kitab Al-Jami'* (الجامع لمفردات الأدوية والأغذية)	Rhubarb (purgative)	2 **dirhams**	**Dirham** (≈ 3 grams)	Decoction, taken once daily to ease bowel movements
		Olive oil (emollient and mild purgative)	1 **mithqal**	**Mithqal** (≈ 4.25 grams)	Taken on an empty stomach to lubricate and soften blockage
Ibn Rushd (Averroes)	*Kulliyat fi al-Tibb* (الكليات في الطب)	Castor oil	1-2 **mithqals**	**Mithqal** (≈ 4.25 grams)	Taken orally with honey or water for severe obstruction
		Colocynth	0.5 **qirat**	**Qirat** (≈ 0.2 grams)	Mixed into water or honey, used in extreme cases only
Dawud al-Antaki	*Tadhkirat Uli Al-Albab* (تذكرة أولي الألباب)	Olive oil	1-2 **mithqals**	**Mithqal** (≈ 4.25 grams)	Taken orally, especially in early morning for best effect
Al-Zahrawi (Abulcasis)	*Kitab al-Tasrif* (كتاب التصريف لمن عجز عن التأليف)	Aloe	2 **dirhams**	**Dirham** (≈ 3 grams)	Mixed with honey, taken once daily as a purgative
		Senna	3-5 **dirhams**	**Dirham** (≈ 3 grams)	Decoction or powder mixed with water, as a mild purgative
Ibn Tufail	*Al-'Urjuzah Fi Al-Tibb* (الأرجوزة في الطب)	Barley Enema mixed with fat and grease	0.5 ratal	**Ratal** (≈ 382.5 grams)	Repeatedly injected into the bowel to alleviate obstruction
		Iraj (electuary)	1 mithqal	**Mithqal** (≈ 4.25 grams)	Taken orally, combined with liquid for soothing relief

and hydrating approach to lubricate and soften blockages, which stands out from the herbal-based treatments of his peers.

2. Focus on Symptom Management:

- Many classical Islamic physicians, including **Al-Razi**, **Ibn Al-Baitar**, and **Ibn Sina**, suggested treatments that addressed not only the obstruction but also the inflammation and pain associated with it, such as using **aloe** for its anti-inflammatory properties.
- **Ibn Tufail**, while aware of symptomatic relief, appeared to focus more on directly addressing the obstruction itself, particularly with the use of **enemas** and **electuaries** (like **iraj**). His regimen shows a clear intent to clear the blockage through forceful expulsion methods rather than primarily soothing the patient.

3. Unit of Measurement and Precision:

- Most of the physicians used **dirhams** and **mithqals** for their measurements, standard in Islamic medicine, reflecting a consistent approach to ensuring proper dosage.
- **Ibn Tufail** introduced a much larger quantity in his recommendation for the **barley and fat enemas**, suggesting **0.5 ratal** (around 382.5 grams). This is a much more substantial intervention compared

to the smaller dosages of purgatives like aloe or castor oil used by others. His use of **large volumes** shows his emphasis on achieving swift, mechanical relief of the obstruction.

4. Non-Pharmacological Methods:

– Ibn Tufail's **enema therapy** presents a method that could be classified as non-pharmacological compared to the oral and decoction-based treatments of his contemporaries. This focus on physical intervention contrasts with the reliance on **herbal decoctions** seen in the work of Ibn Sina, Al-Razi, and others, who opted for gentler, internally administered treatments.

Table 5. Comparison of Treatments for Acute Abdominal Obstruction and Abdominal Pain: Classical Islamic Physicians vs. Modern Medical Recommendations.

Aspect	Classical Islamic Physicians (10th-14th Century)	**Modern Medical Recommendations** (2024) (American College of Surgeons. Surgical Management of Bowel Obstruction. ACS Clinical Guidelines Series, 2024.).
Condition: Abdominal Pain	**Herbal/Medical Treatments**	**Medical Treatments**
	- Fennel, anise, cumin, and coriander: Used to relieve colic and mild abdominal pain.	- Antispasmodics (e.g., hyoscine, dicyclomine) for muscle spasms and cramping.
	- Ginger and peppermint: Known for their carminative and anti-inflammatory effects.	- NSAIDs (e.g., ibuprofen, aspirin) or acetaminophen for pain relief.
	- Honey and olive oil: Prescribed as emollients to soothe digestive irritation.	- Proton-pump inhibitors (e.g., omeprazole) for pain caused by gastritis or ulcers.
	- Warm infusions and decoctions: Administered to ease pain and aid digestion.	- Dietary adjustments and hydration therapy for gastrointestinal pain.
	- Massage and abdominal manipulation: Proposed by Al-Tamimi to relieve cramping.	- Antibiotics if pain is due to an infection, such as gastroenteritis.
Condition: Acute Abdominal Obstruction (Ilawech)	**Herbal/Medical Treatments**	**Medical Treatments**
	- Senna leaves, rhubarb, and aloe: Used as purgatives to relieve blockages.	- Laxatives (e.g., polyethylene glycol, lactulose) to soften stools and ease passage.
	- Castor oil and olive oil: Taken orally to lubricate and facilitate bowel movements.	- Enemas to clear lower bowel blockages.
	- Colocynth (bitter apple): Used in small doses as a strong laxative but dangerous in high doses.	- Osmotic laxatives and stimulant laxatives in more severe cases.
	- Manual abdominal manipulation and massage: Proposed by Al-Tamimi to ease obstruction.	- Intravenous fluids and nasogastric decompression for more severe cases of obstruction.
Surgical Treatment for Acute Abdominal Obstruction	**Surgical Treatments (Classical)**	**Surgical Treatments (2024)**
	- Al-Zahrawi advocated surgery in severe cases of intestinal obstruction.	- Laparoscopy or open abdominal surgery to relieve bowel obstruction.
	- Surgical tools and techniques included incisions and manual removal of obstructions.	- Minimally invasive surgery is preferred for less recovery time and fewer complications.
	- Post-surgical care was emphasised, with dietary changes and close monitoring.	- Post-operative management includes antibiotics, hydration, and bowel rest.

The table highlights both the similarities and advancements in treating abdominal pain and acute intestinal obstruction across centuries. Classical Islamic physicians, such as Al-Zahrawi, Ibn Sina, and Ibn Tofail, relied on a combination of herbal remedies, purgatives, and non-invasive methods like massage to manage these conditions. Their approach was largely based on natural treatments and manual interventions,

with surgery reserved only for the most severe cases, particularly by Al-Zahrawi, who pioneered surgical techniques for intestinal blockages.

In modern medicine, while certain herbal treatments (e.g., fennel, ginger) continue to be recognised for their digestive benefits, synthetic drugs like antispasmodics, NSAIDs, and laxatives are more commonly used. For severe cases, minimally invasive surgeries, such as laparoscopy, represent a significant advancement, offering faster recovery and fewer complications than the classical surgical methods.

Overall, the comparison shows the evolution from traditional herbal and manual techniques to more precise pharmaceutical treatments and advanced surgical interventions, reflecting the continuous improvement in medical practices.

Conclusion

The examination of Ibn Tufail's medical poem *Al 'Urjuzah Fi Al Tibb* reveals a profound understanding of gastrointestinal disorders and posology within medieval Islamic medicine. Ibn Tufail's innovative approach to abdominal pain and acute intestinal obstruction not only demonstrates continuity with earlier traditions but also introduces distinctive methodologies, particularly his emphasis on bile dysfunction and the individual patient's constitution in treatment strategies.

These classical physicians displayed a sophisticated grasp of posology, carefully analysing dosages and the administration of herbal remedies to optimise therapeutic efficacy while minimising risks. Their reliance on herbal treatments, purgatives, and non-invasive techniques reflects a holistic approach that integrates pharmacological knowledge with a deep understanding of natural remedies and the body's response to interventions, positioning surgery as a last resort.

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ΠΕΡΙΛΗΨΗ

Φυτοθεραπευτική γνώση και πρακτικές λύσεις: συγκριτική ανάλυση των θεραπευτικών προσεγγίσεων για το κοιλιακό άλγος και την οξεία εντερική απόφραξη στο έμμετρο έργο του Ibn Tufail «Al 'Urjuzah Fi Al Tibb» και σε άλλα κλασικά ισλαμικά ιατρικά συγγράμματα, με έμφαση στη δοσολογία

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Καθ' όλη τη διάρκεια της ισλαμικής ιατρικής ιστορίας, η ποίηση αποτέλεσε βασικό μέσο μετάδοσης περίπλοκων ιατρικών γνώσεων με τρόπο προσιτό. Το έργο του Ibn Tufail *Al 'Urjuzah Fi Al Tibb* αποτελεί χαρακτηριστικό παράδειγμα αυτής της παράδοσης, προσφέροντας διδακτικούς στίχους πλούσιους σε θεραπευτικές γνώσεις, ιδιαίτερα σε ό,τι αφορά τον κοιλιακό πόνο και την οξεία εντερική απόφραξη. Η παρούσα μελέτη εμβαθύνει στις δοσολογικές αρχές που περιγράφονται στο ποίημα του Ibn Tufail, αναλύοντας τον τρόπο με τον οποίο προσάρμοζε τις δόσεις ανάλογα με τις ιδιαίτερες ανάγκες διαφορετικών δημογραφικών ομάδων ασθενών, όπως οι ηλικιωμένοι, τα παιδιά και οι έγκυες γυναίκες. Η ανάλυση αναδεικνύει την επιμελή χρήση μετρήσεων βάρους και όγκου στις συνταγές του, αντανακλώντας την επιστημονική ακρίβεια που χαρακτήριζε την ισλαμική ιατρική πρακτική. Το άρθρο εντάσσει τη

συμβολή του Ibn Tufail στο ευρύτερο πλαίσιο της μεσαιωνικής ισλαμικής ιατρικής, υπογραμμίζοντας τη διαχρονική αξία των στρατηγικών δοσολογίας του στη σύγχρονη ιατρική φροντίδα. Επιπλέον, αναδεικνύει τη διαρκή σχέση ποίησης και ιατρικής, επιβεβαιώνοντας τη σημασία των ποιητικών ιατρικών κειμένων τόσο ως κλινικών πηγών όσο και ως παιδαγωγικών εργαλείων για τη διατήρηση και διάδοση της ιατρικής γνώσης από γενιά σε γενιά.

Λέξεις Κλειδιά: *Δοσολογία, Ibn Tufail, Al 'Urjuzah Fi Al Tibb Ισλαμική ιατρική ιστορία*

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