

## HERBAL MEDICINE ΒΟΤΑΝΟΛΟΓΙΚΗ ΘΕΡΑΠΕΙΑ

### Ibn Al-Baitar A 13th-century botanical scientist and his suggestions on urinary tract problems

**OBJECTIVE:** Ibn Al-Baitar was born in Malaga, Andalusia in the last quarter of the 12th century. He took botanical training in Andalusia and conducted extensive research in botanics, collected many drugs, vegetables, animal products, and introduced them to the medical world. He was recognised as the greatest botanical scientist and pharmacist of his time. ‘Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya’ is Ibn Al-Baitar’s best-known work, acknowledged as the largest plant and drug book of the Middle Ages. It was published in Arabic in 1875, and translated into Latin, German, and French. To the best of our knowledge, so far drugs for urinary tract (UT) problems in Ibn Al-Baitar’s work have not been reported in the literature. In this study, we summarised Ibn Al Baitar’s suggestions for UT problems. **METHOD:** For this study, we examined one of the copies of Ibn Al Baitar’s manuscript in the records of Turkey. This copy was published in Turkish by the Medical History and Ethics Department of the University of Health Sciences in 2017, and its original copy (written in 1573) is protected in the Hagia Sophia Collection in the Istanbul Süleymaniye Manuscripts Library (Library no: 3745). We identified the drugs that have an effect on the urinary system. **RESULTS:** In this book, the names of plants, animals and minerals used as medicines are classified alphabetically, and the manner of their preparation and use is described in detail. It has been found that almost 175 drugs were effective for UT, of which 150 were herbals. Their main effects were diuresis, treatment of UT infection, dissolving of urinary stones and analgesia. **CONCLUSIONS:** The majority of drugs reported in ‘Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya’ for UT are mixed-acting, and the product of vast experience and observations. Although modern medicine studies have demonstrated that they contain many active substances, it is hard to determine exactly which substance had a specific effect on the urinary system.

#### 1. INTRODUCTION

Ibn Al-Baitar was born in the city of Malaga, Andalusia in the last quarter of the 12th century. Ibn Baitar was his father’s nickname; his original name was “Ziyaeddin Abu Muhammad Abdullah bin Ahmed al-Andalus al-Maliki”. Since his father was a baitar (veterinary), he was interested in botany from an early age and hence called an “al-ashshab” (botanist). He was trained by Ibnur-Rumiyye on medicinal plants, their names and where they grew. He conducted extensive research together with his teacher in Seville. He travelled to different regions of Andalusia in his twenties, collected plant samples, was taught by famous pharmacists and did research on plants.<sup>1-4</sup>

In order to increase his knowledge and experience, he travelled across North Africa between the years 1220–1223, to Morocco, Tunisia, Algeria, and Tripoli. He came to Anatolia in 1223; he travelled to the northern Mediterranean coast and the Greek islands and then went to Alexandria. He became the chief botanist of the Egyptian Ayyubid sultanate. He conducted extensive research in botanics in the Middle East and trained many students in Cairo and Damascus. He died in Damascus in 1248. During his lifetime, he travelled to three continents and collected many vegetable, animal and mineral drugs and wrote an important book, “Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya”. He was recognised as the greatest botanist of his time.<sup>4,5</sup>

Ibn Al-Baitar read the books of famous medical scholars

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Ibn Al-Baitar: Ένας επιστήμονας  
Βοτανολογίας του 13ου αιώνα  
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Περίληψη στο τέλος του άρθρου

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such as Dioscorides, Galen, Hippocrates, Ibn-i Sina, Ebubekir er-Razi, Gafiki and wrote commentaries on some of them. He also checked information about plants with observations and experiments and introduced many plants and medicines to medical literature. He also conducted research on animals and minerals.<sup>4-6</sup>

He produced seven works, the most famous being 'Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya'. In this, the names of plants, animals and minerals used as medicines are classified alphabetically, together with the methods used. This book is acknowledged as the largest plant and drug book of the Middle Ages, because it contains detailed descriptions of several medicinal plants, foods, and drugs together with their therapeutic values. It was written between 1242 and 1248 and presented to the Egyptian Ayyubid Sultan Melik Salih Necmeddin Eyyub.<sup>4-6</sup> This book was used in Europe until the 19th century. It was published in Arabic in 1875 and translated into Latin, German, and French.<sup>7-6</sup>

There are many publications in the literature explaining his works. To the best of our knowledge, so far drugs effective on UT mentioned in this book have not been reported.

## 2. MATERIAL AND METHOD

'Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya' was introduced into Ottoman Turkish in the 14th-15th centuries. The name of the translated book is 'Tercüme-i Müfredat-ı İbn-i Baytar'. This work was first translated from Arabic to Ottoman Turkish for "Gazi Umur Bey of Aydinogullari" (1334–1348), and called the "Tire" copy (Tire is an old town of İzmir, Turkey). After presenting this book to Umur Bey, 17 copies were produced by different copyists in the following years.<sup>5</sup> One of these 17 copies in records of Turkey is the copy in the Hagia Sophia Collection (Library No: 3745) that has not been translated into Turkish to date.<sup>1,6</sup> This copy was translated into Turkish by the University of Health Sciences (UHS) in 2017 (fig. 1). The translation team contributed to this book<sup>1</sup> by comparing the other five Ottoman Turkish copies and two Arabic copies especially based on the original book printing in Arabic in Beirut in 1992.<sup>1,7</sup>

Although its original Arabic form includes more than 1,400 drugs (animal products, vegetables, several minerals or stones), 200 herbal medicines have been identified for the first time in this book.<sup>3-7</sup> Since each of the translators made some selections and abbreviations in the number of drugs, there was a difference in numbers in the copies translated into Ottoman Turkish. There were 958 drugs numbered in the Arabic alphabet in the book translated by the UHS. We selected and introduced the drugs effective for UT.<sup>1</sup>



Figure 1. The first page of 'Tercüme-i Müfredat-ı İbn-i Baytar'.<sup>1</sup>

## 2. RESULTS

There were almost 175 drugs effective for UT, of which 150 were herbals. Their preparation and use are described in detail. The main effects of those drugs for UT were diuresis, dissolution of kidney and bladder stones, relieving kidney and bladder pain, prevention of urinary incontinence/retention, excretion of harmful substances, strengthening the kidneys/bladder, removing of bile damage from the kidneys and bladder, and treating oliguria-anuria.

We classified the effects of those drugs on the urinary system into four categories (tables 1–4).<sup>1</sup> Since the same drug may be placed in different tables because of its mixed effect, the total number of drugs seems to be increased (n: 215).

### 3.1. Diuretic drugs

We found that 125 drugs were possibly effective on diuresis; while 25 substances had single, the others had mixed effects on UT. Some of these drugs are shown in table 1.

### 3.2. Drugs effective for UT infections

In total, 23 substances had an anti-inflammatory effect, of which 9 had a single effect on UT (tab. 2).

**Table 1.** Diuretic drugs in the Ibn Al-Baitar's manuscript.<sup>1</sup>

Page	Drug name	Latin name/ingredients	Turkish name	Effect on urinary tract
22	ارمينين Arminun	Salvia horminum	Deve tabanı	Relief of urinary retention
23	Erak اراك	Salvadora persica	Misvak ağacı	Diuretic, clearance of bladder
29	Esel اسل	Juncus acutus	Kogalık	Diuretic
30	Istiragalıs, اسطراغاليس	Astragalus L.	Tavşancıl toynağı-tırnağı	Diuretic
37	Aşhis اشخيس	Atractylis gummifera	Sakız dikenı	Relief of urinary retention
37	Uşnan اشنان	Arthrocnemum glaucum	Çoğan, çöven otu	Relief of urinary retention
41	Agıres, agirus اغيرس-agiros	Populus nigra	Kara kavak	Stimulates kidney, relieves urinary dripping
44	Afsentin افسنتين	A. absinthium	Pelin otu- acı pelin	Diuretic
46	Şarab-ı afsentin	Wormwood wine	Pelin otu şarabı	Diuretic, excretion of harmful substances
49	Akhuvan اقحوان	Anthemis cotula	Köpek Papatyası	Diuretic
56	amarıptın amaritun	H. stoechas	Altın çiçeđi	Diuretic
59	incidan انجدان	Ferula assafoetida	Şeytan tersi	Stimulates kidney
59	Anısun انيسون	Pimpinella anisum	Anason	Diuretic, effective on kidneys
66	Unuberuhiş اونوبروخيش	O. vicifolia,	Yonca otu	Relieves urinary retention and dripping
67	Unumali انومالی	Honey and wine	Bal ve şarap	Diuretic
78	Badıncan باطنجان	S. melongena	Patlıcan	Diuretic
100	Balasan بلسان	C. opobalsamum	Belesan ağacı, balsam ağacı, Mekke pelesengi	Diuretic
102	Bellutu'l Arz	Teucrium chamaedrys	Yer peliti	Diuretic
119	Türmüs ترمس	Lupin	Termiye-ibn baytar Acı bakla-bedevian	Diuretic
123	Tilfaf تفاق	Sonchus oleraceus	Eşek marulu	Diuretic
143	Centayana جنطايانا	G. lutea	Centiyana	Diuretic
145	Cevz-i bevva (Cevz-i buva) جوز بوا	Myristica fragrans	Bayađı ceviz (ibn baytar) Küçük hindistan cevizi Besbase muskat	Diuretic

**Table 1.** (continued) Diuretic drugs in the Ibn Al-Baitar's manuscript.<sup>7</sup>

Page	Drug name	Latin name/ingredients	Turkish name	Effect on urinary tract
146	Haşa حاشا	Thymus capitatus	Kekik (koni başlı)	Diuretic
155	Harmel حرمّل	Peganum harmala	Uzerlik	Diuretic
158	Harşef حرفش	Cynara scolymus	Kenger dibi	Diuretic
158	Hazazü's sahr حزاز الصخر	Usnea barbata	Taş kınası Çiçekli yosun	Diuretic
166	Hımmas حمص	Cicer arietinum	Nohut	Diuretic
175	Havr حور	P. pyramidalis	Kavak ağacı	Diuretic

**Table 2.** Drugs for urinary tract infections in the Ibn Al-Baitar's manuscript.<sup>7</sup>

Page	Drug name	Latin name	Turkish name	Effect on urinary tract
30	As آس	M. communis	Mersin	Improves bladder inflammation, diuretic Removes urine foam
134	Sil ثیل	A. repens	Ayrık otu	Recovery of bladder abscess Dissolving of urinary stones Relief of urinary retention, diuretic
162	Hulbe حلبه	Triganella foenum-graecum	Boy, çemen otu	Improves bladder cold Relief of urinary dripping
176	Hubbazi خبازی	Malva sylvestris	Ebegümeçi	Improves bladder and kidney inflammation
193	Hulincan (havlincan) خولنجان	Galanga officinarum	Havlıcan	Improves kidney cold
228	Rasan راسن	Inula helenium	Anduz, andız otu	Improves cold-related bladder malady diuretic, strengthens the bladder, removes harmful substances in blood via urine
254	Su'd سعد	Cyperus longus	Topalak	Improves cold-related bladder malady, diuretic, dissolving of bladder stones, stimulation of kidneys, prevention of urinary dripping
367	Nebiz نبيذ	Wine made from grapes, barley, wheat, honey and dates	Üzüm, arpa, buğday, bal ve hurmadan yapılan şarap	Relieves dysuria, diuretic, stimulates kidney and bladder, dissolves urinary stones, useful for kidney pains
388	Yeneste, yenestele ينيستاله	Equisetum arvense	Umsuh At kuyruğu	Improves kidney and bladder malady

### 3.3. Drugs effective for UT stones

In total, 40 substances were possibly effective for dissolving urinary tract stones, of which 15 had a single effect. Some of them are shown in table 3.

### 3.4. Analgesic drugs for the UT

In total, 27 analgesics were possibly effective for the UT; 13 were only analgesics while the others had mixed actions. Some of these are shown in table 4.

**Table 3.** Drugs effective on urinary tract stones in the Ibn Al-Baitar's manuscript.<sup>1</sup>

Page	Drug name	Latin name	Turkish name	Effect on urinary tract
6	İksar (aksar)	C. bulbocastanum conopodium denudatum	Hilal otu خلال	Dissolves kidney and bladder stones
9	Abanus أبنوس	L. ebanus-	Abanoz	Dissolves kidney stones
32	Şarabü'l as:	A kind of wine	Mersin şarabı	Diuretic Dissolves urinary stones
36	Uşne اشنه	Musculus arboreus	Yosun	Dissolves kidney and bladder stones
60	Encüre أنجره	U. pillulifera	Isırgan	Dissolves kidney and bladder stones
70	Eyyil (üyyel, iyyel)	Alces alces	Sığır geyiği	Diuretic Dissolves bladder stones
72	Babunec بابونج	Chamomilla officinalis	Papatya	Diuretic, Dissolves urinary stones
92	Bittih بطيخ	Citrullus vulgaris	Kavun kavun çekirdeği	Diuretic Dissolves bladder stones
94	Baklatü'l hamka بقلة الحمفا	Portulaca oleracea	Tohmekan Semiz otu	Dissolves kidney and bladder stones Diuretic
139	Ceradü'l bahr	Cryfish	Kerevit, deniz çekirgesi	Dissolves kidney and bladder stones
148	Hacerü'l yehud	Israel olive	İsrail zeytini	Dissolves kidney and bladder stones
150	Hacerü'l isfenc	modo pumice	Sünger taşı	Dissolves kidney and bladder stones
152	Hacerü'l mesane	Human bladder stone	İnsan mesane taşı	Dissolves kidney and bladder stones
152	Hacerü'l hut	White stone in fish brain	Balık beyinde bulunan ak taş	Dissolves kidney and bladder stones
159	Hazenbel حرنبل	Myriophyllum verticillatum	Eğir kökü	Dissolves kidney and bladder stones
237	Zücac زجاج	Glass	Sırça (cam)	Dissolves bladder stones
257	Sukulufenderyun سقولوقندريون	Scolopendrium vulgare	Altun otu Talak otu	Dissolves kidney and bladder stones, prevents urinary dripping
259	Sekbinec سكبينج	Ferula szowitsiana	At kasnisi	Diuretic Dissolves kidney and bladder stones
265	Sümana سمانا	Quail (Coturnix coturnix)	bıldırcın	Diuretic Dissolves kidney and bladder stones
270	Sisenber	Thymus glaber	Marsama	Prevents urinary dripping, dissolves kidney and bladder stones
277	Şuniz شونيز	Nigella sativa	Çörek otu	Dissolves kidney and bladder stones
280	Şirruk (şirzak)	Bat feces	Yarasa dışkısı (idrarı)	Dissolves bladder stones
298	Akrep	Scorpion	Akrep	Dissolves kidney and bladder stones
311	Ferahu'l-himam Firahu'l-hamam	Pigeon cub	Güvercin yavrusu	Dissolves kidney and bladder stones
315	Kakule قاقوله	A cardamon	Kakule	Dissolves kidney stones
316	Kurretü'l-ayn قرنت العين	S. latifolium	Su kerevizi	Dissolves kidney stones, prevents urinary retention
326	Kebabe كبابه	P. cubeba	Kebebe, Hind biberi	Diuretic, clearance of urinary tract, Dissolves kidney and bladder stones
338	Lisanü'l asafur	Fraxinus exelsior	Kuş dili ağacı	Dissolves urinary stones, prevents urinary dripping
378	Heylun (helyun) هيلون	Asparagus officinalis	Kolan kuyruğu	Dissolves kidney and bladder stones Diuretic, stimulates kidneys and bladder

**Table 4.** Analgesic drugs for the urinary tract in the Ibn Al-Baitar's manuscript.<sup>1</sup>

Page	Drug name	Latin name	Turkish name	Effect on urinary tract
63	Anagalis اناغالبيس	Anagyris foetida	Domuz dikenini, katır kuyruğu	Useful for kidney and groin pain
104	Benefşe بنفشه	V. odorata	Menekşe	Relieves kidney and bladder pain Diuretic
110	Binat-ı verdan بنات وردان	Cockroach	Düdülcerad Hamam böceği	Relieves kidney pain Diuretic
112	Bunyun بنيون	Bunium pumila	Kereviz	Relieves kidney and bladder pain Diuretic
151	Hacer-i iraki		Bileği taşı	Relieves kidney pain
205	Dühhnü'l merzencuş دهن المرزنجوش	Majorana hortensis	Merzencuş yağı Mercanköşk yağı	Relieves back pain and kidney pain
214	Dühhnü'l hasek خسك	Tribulus terrestris	Demir dikenini yağı	Relieves back pain and kidney pain
214	Dühhnü nüvari'l kundud (dühhnü nevari'l kandul) نوار القندود	Tree in Jerusalem mountain	Kudüs dağı ağacı	Relieves bladder and kidney pain
216	Dühhnü'l-levzi'l-mürr	P. amygdalus amara	Acı badem yağı	Relieves bladder and kidney pain prevents urinary retention dissolves kidney and bladder stones
217	Dühhnü'l-levzi'l-hulv	P. amygdalus	Tatlı badem yağı	Relieves bladder and kidney pain prevents urinary retention
228	Ravend-i çini راوند	Rheum officinale	Ravend-i çini	Useful for kidney and bladder pain
261	seliha سليجيه	Cinnamomum aromaticum	Yalan tarçını	Diuretic Useful for kidney pain
267	Semmur	Sable fur	Semmur	Fur coat wear is useful for kidney pain
267	Sünbül سنبل	Hyacinthus	Sünbül	Useful for kidney and bladder pain Diuretic
285	Suf	wool	Yün	Fur coat wear is useful for kidney and bladder pain
302	Unnab عنااب	Ziziphus sativa	Hünnab	Useful for kidney and bladder pain
305	Garikun غار يقون	Polyporus officinalis	Katran köpüğü	Useful for kidney pain
308	Fucl فجل	Raphanus sativus	Turp	Useful for kidney and bladder pain Diuretic
310	Ferasiyün فراسيون	Marrubium alysson	Kavkaz	Useful for kidney pain
316	Kardamana قردمانه	Lagoecia cuminoides	Yaban kimyonu	Useful for kidney pain Prevents urinary retention
328	Kürras كرات	Allium porrum	Kendene Prasa	Useful for bladder pain Diuretic,
367	Nebiz نبيذ	Wine made from grapes, barley, wheat, honey and dates	Üzüm, arpa, buğday, bal ve hurmadan yapılan şarap	Useful for kidney pain, diuretic, stimulates kidney and bladder, dissolves kidney and bladder stones, relieves dysuria
372	Nilüfer نيلوفر	Nymphaea lotus	Nilüfer çiçeği	Useful for bladder pain



#### 4. DISCUSSION

'Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya' is Ibn Al-Baitar's best-known work, acknowledged as the largest plant and drug book of the Middle Ages. In this book, he examines almost 1,400 different drugs under 2,330 titles. The most cited authors are Dioscorides, Galen, Ibn Sina and al-Razi.<sup>4-7</sup>

In literature, there are several studies examining the works of Ibn Al-Baitar. These mention several drugs that can be used in treating different diseases, such as alopecia and leucorrhea, without explaining their active ingredients, herbal drugs used in the treatment of freckles and aphrodisiac formulas.<sup>8-11</sup>

Ibn Al-Baitar contributed greatly to the development of essential oils, particularly those used in therapies. He used a distillation method (using steam to remove oil from the plant) to obtain essential oils.<sup>12</sup>

To the best of our knowledge, so far drugs effective for the UT in Kitab Al-Jami have not been separately reported in the literature. We searched these drugs in this book.

Although most of these substances have mixed action, they are divided into 4 different groups, according to their main actions. Those with diuretic effects, those beneficial for UT infections, those dissolving urinary stones, and those useful in urinary system pain (analgesic drugs) (tables 1–4).

All of those drugs are the product of vast experience and observations. Modern medicine studies have demonstrated that they contain many active substances. However, it is hard to determine exactly which substance had a specific effect on the urinary system. All of them should be investigated pharmacologically with detailed laboratory studies. We hope that the active molecules of those substances, discovered by pharmacological research, can be introduced to the medical world as new therapeutic agents for UT problems.

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#### ΠΕΡΙΛΗΨΗ

##### Ibn Al-Baitar: Ένας επιστήμονας Βοτανολογίας του 13ου αιώνα και οι προτάσεις του για τα προβλήματα του ουροποιητικού συστήματος

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**ΣΚΟΠΟΣ:** Ο Ibn Al-Baitar γεννήθηκε στη Μάλαγα της Ανδαλουσίας το τελευταίο τέταρτο του 12ου αιώνα. Έλαβε βοτανική εκπαίδευση στην Ανδαλουσία και διεξήγαγε εκτεταμένες έρευνες στη βοτανική, συγκέντρωσε πολλά φάρμακα, λαχανικά, ζωικά προϊόντα και τα παρουσίασε στον ιατρικό κόσμο. Αναγνωρίστηκε ως ο μεγαλύτερος βοτανολόγος επιστήμονας και φαρμακοποιός της εποχής του. Το "Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya" είναι το πιο γνωστό έργο του Ibn Al-Baitar, αναγνωρισμένο ως το μεγαλύτερο βιβλίο φυτών και φαρμάκων του Μεσαίωνα. Εκδόθηκε στα Αραβικά το 1875 και μεταφράστηκε στα Λατινικά, τα Γερμανικά και τα Γαλλικά. Από όσο γνωρίζουμε, μέχρι στιγμής δεν έχουν αναφερθεί στη βιβλιογραφία τα φάρμακα για προβλήματα ουροφόρων οδών (UT) στο έργο του Ibn Al-Baitar. Στην παρούσα μελέτη, συνοψίσαμε τις προτάσεις του Ibn Al Baitar για προβλήματα των ουροφόρων οδών. **ΜΕΘΟΔΟΣ:** Για τη μελέτη αυτή, εξετάσαμε ένα από τα αντίγραφα του χειρόγραφου του Ibn Al Baitar στα αρχεία της Τουρκίας. Αυτό το αντίγραφο εκδόθηκε στα τουρκικά από το Τμήμα Ιατρικής Ιστορίας και Δεοντολογίας του Πανεπιστημίου Επιστημών Υγείας το 2017 και το πρωτότυπο αντίγραφο του (που γράφτηκε το 1573) φυλάσσεται στη συλλογή Αγία Σοφία στη Βιβλιοθήκη χειρογράφων İstanbul Süleymaniye (αρ. βιβλιοθήκης: 3745). Προσδιορίσαμε τα φάρμακα που έχουν επίδραση στο ουροποιητικό σύστημα. **ΑΠΟΤΕΛΕΣΜΑΤΑ:** Σε αυτό το βιβλίο, τα ονόματα των φυτών, των ζώων και των μεταλλικών στοιχείων που χρησιμοποιούνται ως φάρμακα ταξινομούνται αλφαβητικά και ο τρόπος παρασκευής και χρήσης τους περιγράφεται λεπτομερώς. Έχει βρεθεί ότι σχεδόν 175 φάρμακα ήταν αποτε-

λεσματικά για τις ουροφόρες οδούς, εκ των οποίων τα 150 ήταν βότανα. Οι κύριες επιδράσεις τους ήταν η διούρηση, η θεραπεία της λοίμωξης του ουροποιητικού συστήματος, η διάλυση των ουρολίθων και η αναλγησία. **ΣΥΜΠΕΡΑΣΜΑΤΑ:** Η πλειοψηφία των φαρμάκων που αναφέρονται στο “Kitab Al-Jami Li-Mufradat Al-Adwiya Wa Al-Aghdhiya” για τις ουροφόρες οδούς αποτελούν προϊόν μείξης και προϊόν τεράστιας εμπειρίας και παρατηρήσεων. Αν και οι μέλητες της σύγχρονης ιατρικής έχουν αποδείξει ότι περιέχουν πολλές δραστικές ουσίες, είναι δύσκολο να προσδιοριστεί με ακρίβεια ποια ουσία είχε συγκεκριμένο αποτέλεσμα στο ουροποιητικό σύστημα.

**Λέξεις ευρητηρίου:** Ibn Al Baitar, Kitab Al Cami, Παθήσεις του ουροποιητικού συστήματος στην Ανδαλουσιανική Ιατρική

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