

**Research Article**

**An Investigation into Concepts of Uroscopy as Viewed  
by Renowned Unani Physicians**

**Nazmeen<sup>1\*</sup>, Ataulah Fahad<sup>2\*</sup>, SM Ahmer<sup>2\*</sup>,  
Jaleel Ahmed<sup>3</sup> and Ayesha Fatema<sup>3</sup>**

<sup>1</sup>Associate professor, Department of Munafeul Aza, A&U Tibbia College,  
Karol Bagh, New Delhi, India.

<sup>2</sup>Assistant professor, Department of IlmuAmraz, Aligarh Muslim University,  
Aligarh, India.<sup>3</sup> Associate prof. Dept. Kuliyat, & Molijat,  
Z.V.M. Unani Medical College And Hospital, Azam Campus, Camp, Pune.

**Corresponding author:** Email: drataullahfahad@gmail.com Mob: +918057139183

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**ABSTRACT:**

**Objectives:** The aim of this review study is to evaluate the concepts of uroscopy as viewed by Buqrat, Jalinoos, Razi and Ibn Sina. **Materials & Methods:** In this review study, we reviewed Al-Qanoon fil Tibb by Ibn Sina, Al-hawi by Zakaria Rhazi, Corpus Hippocraticum, some other books of ancient Unani physicians and philosophers, journals, periodicals and manuscripts. **Result:** A thorough study of the writings of ancient physicians reveals that despite restrictions and limitations of antiquity, they theorized that urine is a liquid window through which physicians could view the body's inner workings. Numerous physiologic theories arose from uroscopy. By uroscopy they not only diagnosed the pathological conditions, but they were able to predict some upcoming ailments also. In this review study, it was found that the principles of detecting illnesses through urine by the ancient physicians are very scientific and it opened doors for chemical, microscopic and molecular studies.

**Keywords:** *Uroscopy, Buqrat, Jalinoos, Razi, Ibn Sina.*

**INTRODUCTION:**

Before this century, urine was the predominant body fluid used by the physician for diagnosis and prognosis. Uroscopy, or urinalysis by the senses, was probably an important part of diagnosis for the physician, even before the chemical analysis of urine<sup>1</sup>. A thorough study of Babylonian and Sumerian texts reveals that history of uroscopy is as old as these civilizations. Almost all physicians in antiquity referred to the value of urine examination in the diagnosis and prognosis of diseases.

**Buqrat** (460-377 BC), who is thought to be the first uroscopist, believed that urine was a filtrate of four humours which came from blood and filtered from kidneys. He described that the bubbles on the surface of fresh urine is an indicator of kidney disease and a long illness<sup>2</sup>.

He also associated the urinary sediment with fever. He noticed that fever changes the way a patient's urine smells<sup>3</sup>. In the aphorisms, he stated "When the urine of a man with fever is thick, full of clots and of small quantity, an increase in quantity and clarity is advantageous. Such a

change is especially likely to occur if, from the beginning or very shortly afterwards, the urine has a sediment<sup>4</sup>. Actually, he is saying that the sediment in the urine can be used to follow the course of a disease for which a fever is a major symptom. He commented that blood or pus in the urine indicated ulceration of the kidneys or of the bladder<sup>5</sup>. Written instructions on urine are found in the *Corpus Hippocraticum*, book of Prognostic, XII: "When the urine is not constantly stable, i.e. when at times it has a clear appearance, and at other times it contains a white, homogeneous sediment, in that case the disease will last longer and implies a higher risk. When the urine is reddish, and the sediment has the same colour and is homogeneous, the disease will last much longer but recovery can be relied upon... Clouds floating in urine have a good meaning when they are white, but a bad meaning if they are black. As long as the urine is yellow and thin, this signifies that the disease is still in an early stage. When the urine remains like this for a long period, it is to be feared that the patient will not resist much longer before the disease reaches the critical point"<sup>6</sup>

**Jalinoos** (129-200 AD) refined Buqrat's ideas, theorizing that urine represented, not a filtrate of the four humors and overall condition, but rather, a filtrate of the blood<sup>7</sup>. He sought to make urine diagnosis more specific. He used the phrase, 'diarrhea of urine' to describe excessive urination, and noted that it was an atypical symptom. We now know that polyuria is a symptom of diabetes and other conditions. He thought that the liquid ingested equaled the urine expelled in a healthy person. He continues to say "Now, the amount of urine passed every day shows clearly that it is the whole of the fluid drunk which becomes urine, except for that which comes away with the dejections or passes off as sweat or insensible perspiration". Today, a decrease in urine output is known to be a symptom of dehydration or chronic renal failure<sup>8</sup>.

**Abu Bakr Mohammad Ibn Zakariya Razi** (865-925 AD), in his encyclopedia of medicine (*Kitabul Havi Fit Tibb*), devoted 144 pages to the

examination of urine and varieties of urinary sediment, color and concentration<sup>9</sup>. Razi reveals "A Urine similar to urine of healthy people indicates that the producer of that urine has competent vessels and circulation. If urine is not ripened (less mature and not concentrated) that is indicative of vessels weakness". Discussing the causes of hematuria, Razi explains that if blood comes out before urine it means there is an ulcer in urethra. While when urine is red and suddenly patient develops difficulties passing urine it means that there is a clot inside the bladder and in order to help the patient that clot has to be dissolved. He differs with Jalinoos about urinary sediment and writes "Jalinoos says in winter time the volume and sediment of urine increases, as the metabolism and ripening of urine is more. In my view the volume is more because there is less sweating in winter but about the sediment I agree with Jalinoos". He believed that the physical examination of patient is prerequisite of uroscopy. Apart from urinary sediment, color and consistency, he advocated the importance of touch and taste of urine. He stated that with exhaustion and starvation the urine becomes dark yellow in color and bitter in taste. He further states that: "In some cases urinating blood is due to lung disease or the underside of the diaphragm<sup>10</sup>. He continued to say "When urine turns black, it carries very poor prognosis. I have not seen anyone with black urine and black urinary sediment who has survived". Razi described case history of a middle aged man who had urinary incontinence and white mucous like thread in urine causing dysuria. After a complete history, he diagnosed that with previous catheterization the bladder was injured<sup>11</sup>. He stated that presence of pus with foul smell indicates ulcer in urinary bladder<sup>12</sup>.

**Abu Ali Al Husain Ibn Abdullah Ibn Sina** (980-1037 AD) wrote *Al-Qanun Fil Tibb* which was used as a text-book in the universities of Montpellier and Louvain as late as 1650<sup>13</sup>. In this encyclopedia, he described urinalysis in scientific manner. He recommended following guidelines to be followed prior to the uroscopy<sup>14,15,16,17</sup>:

- Urine must be passed in the morning.
- It must not be retained in the bladder for too long.
- The specimen should be of the overnight urine.
- The subject be advised not to have taken any food or drink before passing urine.
- The subject is not to have taken substances which color the urine as saffron or cassia fistula.
- Substances having coloring property, such as henna, should not be applied on the face and skin.
- He should not have taken agents which expel some humor, such as the agents which expel Safra(bile) and Balgham (phlegm).
- The subject should not have undertaken much movement (Harkat) and exercise (Riyazat) or be in an unnatural state that would drastically alter the humoral balance or metabolism from its usual state, e.g. fasting, insomnia, fatigue, hunger and anger, for all them change the color of the urine.
- The urine should not be examined if it has been left even for an hour.
- The whole of the urine should be collected in a wide flask.
- Urine should not be collected in a flask which has not been washed after its previous use.
- Examination should not be carried out at once but after the urine has been allowed to settle down in the flask.
- Urine sample must not be exposed to sun or wind.
- The container (Matula) of urine should be transparent and pure in substance, such as clear glass and crystal.
- When the urine is collected in a flask, care should be taken to protect it from the effects of cold, heat and air<sup>18</sup>.

- The sample must be inspected in a light place where the rays do not fall directly upon it.

He continues to write that the following are the points to observe in a sample of urine<sup>19,20</sup>:

- Color
- Texture
- Clearness or turbidity
- Sediment
- Quantity
- Odor
- Foam

**Color:** Ibn Sina explained that a change in the normal color of urine might be an indicator of pathology in various parts of the body. According to the color, urine is divided into five types:

1. Yellow
2. Red
3. Green
4. Black
5. White

**Yellow Urine:** Yellowness of urine has various shades, such as straw yellow, citron yellow, orange yellow, flame yellow and saffron yellow. All except the first two denote heat. They vary according to their degrees owing to excessive movements, pains, hunger dehydration.

**Red urine:** It has four shades; pink, rose red, vermilion red, smoky red. All these denote dominance of sanguineous humour.

**Green urine:** Various shades of green urine are; pistachio green, verdigris green, emerald green and leek green. The urine of green color denotes cold. But verdigris green and leek green are exceptions because they denote extreme combustion.

**Black urine:** It's various shades are; dark urine approaching blackness through a saffron color, Deep brown black and greenish black. Generally black urine denotes: (a) excessive combustion (b) intense cold (c) extinction of the innate heat and its disappearance (d) crisis

(e) expulsion of atrabillious superfluities by the physis.

**White urine:** The varieties of white urine are; mucilaginous urine, Oily urine, Waxy urine, straw like urine, semen like urine, lead white urine, milky urine. He described the significance of white urine in detail.

**Texture and consistency:** According to texture and consistency urine is divided in to three types<sup>21</sup>:

**1. Diluted urine:** Too diluted urine may be produced due to four reasons; (a) immature urine (b) occlusion of the vessels (c) renal failure (d) consumption of too much fluid.

**2. Concentrated urine:** This type of urine in severe illnesses indicates poor prognosis. In healthy individuals it is a sign of dehydration.

**3. Moderate urine:** It indicates that urine is mature and ripened.

**Clearness or turbidity:** Very opaque urine shows lack of maturation. In acute fevers the appearance of opaque urine is a bad sign.

**Odor of urine:** A foul smelling odor with signs of maturation in the urine indicates ulcers in the urinary passages. Foul smelling urine in an apparently healthy person is a sign of developing putrefactive fever, if this type of urine becomes sour; it indicates that there is putrefaction of cold humours by the extraneous heat.

**Froth:** Its abundance denotes viscosity and excess of gas. In renal diseases if the bubbles persist it indicates that the illness will be of long duration.

**Volume:** Ibn Sina knew that dehydration decreases the urinary output as he says "Any time that the volume of urine is much less than the amount of drinking, it indicates that either there is high fever or diarrhea and vomiting".

**Sediments:** Ibn Sina described various types of abnormal sediments which could indicate the pathology of different body parts. He stated that the nature, quality, quantity, form, position, time and amalgamation of sediment

of urine provide valuable information about the various states of the body.

## CONCLUSION:

It is concluded that despite restrictions and limitations, ancient physicians described the examination of urine for diagnosis of diseases in very scientific manner. By uroscopy they not only diagnosed the pathological conditions, but they were able to predict some upcoming ailments also.

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