



Review of Urine Analysis in Asian Medicinal Systems

Dr. Savita Surendra Nilakhe

M.D. (Ayurved) M.A. (Sanskrit)

Associate Professor,

Samhita Siddhant & Sanskrit Department

BVDU, Pune

BharatiVidyapeeth Deemed (To Be) University College of Ayurved

Katraj Dhankawdi Campus, Dhankawadi, Pune 411043

Dr. Madhuri Prasad Bhide

M.D., PhD (Ayurved)

HOD & Professor,

Samhita Siddhant & Sanskrit Department,

BharatiVidyapeeth Deemed (To Be) University College of Ayurved

Katraj Dhankawdi Campus, Dhankawadi, Pune 411043

Dr. Sachin Suresh Kulkarni

M.D., PhD (Ayurved)

Associate Professor,

Samhita Siddhant & Sanskrit Department,

BharatiVidyapeeth Deemed (To Be) University College of Ayurved

Katraj Dhankawdi Campus, Dhankawadi, Pune 411043

(Received: 07 September 2023

Revised: 12 October

Accepted: 06 November)

KEYWORDS:

Urine Analysis, Urinary test, Urinary infections

Abstract:

Substantial advancements in automated urinalysis have been made possible by new technology developments. Reflectometry has made it feasible to read urine test strips quantitatively, and complementary metal oxide semiconductor (CMOS) technology has improved analytical sensitivity and demonstrated promise in the testing of microalbuminuria. The past few decades have seen significant advancements in microscopy-based urine particle analysis, allowing for high throughput in clinical laboratories. An alternative to automated microscopy is urine flow cytometry. Rapid separation of urinary bacteria has been made possible by more comprehensive examination of flow cytometric data. Although Tibetan medicine is hardly known outside of Tibet and India, it is arguably the most innovative and clinically focused traditional medical system, combining the best treatment approaches from both Indian and Chinese medicine. Urinalysis is one of the many distinctive features of Tibetan medicine, as it is used for prognosis in addition to its clinical utility. Clinical observation and theoretical understanding are the foundations of urinalysis. radiation therapy.

Introduction:

Investigation is an important aspect in the process of diagnosis of disease along with clinical examination of the patient in Asian countries since ancient times.. Several examinations of blood, urine and stool have proven their importance in disease diagnosis as well as treatment. Of all these tests urine analysis is a very important & useful test. Information about this is available from ancient times & is a time tested method followed by almost all streams of Asian medicine.

Urine analysis is done to analyze urine because toxins and excess fluids are removed from the body through

the urine. Results of urine analysis definitely provide important clues to health. It is also used to detect certain diseases, such as diabetes, gout, and other metabolic disorders, as well as kidney disease. It is also used to uncover evidence of drug abuse.

There is a specific process involved in the collection of the urine sample. Accurate urinalysis certainly requires a 'clean catch' of urine. Before a person gives a urine sample, he or she should drink plenty of fluids and wait until 1 or 2 seconds for it to be absorbed into the flow of urine before catching the urine in a receptacle. For some tests it is important to get the first urine of the



day, which contains the highest concentration of toxins and other substances to be analyzed. For other tests, a 24-hour collection of urine may be needed.

Urine analysis is done in various ways by different branches of Asian Medicine depending upon their fundamentals. Information about urine analysis & its methods are found mostly in Mongolian, Siddha, Tibetan, Chinese & Ayurved. This essay is a compilation of several urine analysis methods according to these branches.

In **Mongolian** Asian Medicine, the traditional physician reads the pulse, examines the tongue, checks the urine by smell, color and taste and interrogates the patient to diagnose a disease. Feces, urine and sweat are called the three dirt. Amongst them urine is checked by smell, color and taste. This method of urine analysis resembles panchendriya examination i.e external examination through senses.

Siddha Asian medicine has explored examination of eight items of the body. This science has nominated these examination as "*ennvakaitthervu*". According to this branch, physiologically urine has predominance of *Appu(water)* & it is termed *Neer*. It must be examined as follows:

Neer (urine): Neer is collected early in the morning & an examination is made on the basis of its color. Diagnosis of disease is drawn in the following manner. For eg. straw color of urine indicates indigestion, reddish-yellow colour of urine indicates excessive heat, rose color of urine indicates blood pressure, saffron color of urine is found in jaundice whereas urine looks like meat washed water in renal disease. In this way, physical examination of urine has been given importance in ancient Mongolian urine examination.

According to Tibetan medicine, diagnosis is divided into three sections such as

- ❖ Visual observation/ urine analysis
- ❖ Touch/ pulse palpation &
- ❖ Questioning/ interrogation

Of the above three, urine analysis is one of the most unique features of Tibetan medicine in comparison to other forms of ancient medical science. For the Tibetan physician, urine is like a mirror. The best time for the Tibetan physician to inspect the urine is first in the

morning under natural light, and often in the evening when in winter of course, there is no natural light at all. Tibetan physicians' make use of urine analysis to get a knowledge of internal imbalances and body temperature of the patient. The method of urine analysis in their views is as follows. They check the urine immediately after collecting the sample on the spot by stirring it, They mainly check the consistency, the size of the urine bubbles, color & smell of urine and sediment. This proves that Tibetan doctors have also given importance to physical examination of urine.

Let us see the information about urine analysis given in Chinese Medicine. According to Chinese medicine, Yin-Yang theory is found to be useful in the interpretation of clinical signs & symptoms. This is also applicable in urine examination as a diagnostic tool.

According to them, with the deficiency of Yin, urine appears as copious & clear whereas when Yan is in excess, there is scanty & dark urine.

In this way this method of analysis has also mentioned physical examination of urine.

Lastly it is unavoidable to have a look at the information given about urine analysis in Ayurved. This science has its own special methods of clinical examination. Both the patient & the disease are examined clinically through the Ayurvedic method. Urine examination is incorporated with the patient's examination. The examination of the patient is done as mentioned below.

Patient's examination –

➤ 8-fold Examination of Certain body parts (for all patients) –

- Pulse,
- Urine,
- Fecal matter,
- Tongue,
- Sound,
- Palpation,
- Eyes,
- Built.

Diagnosis of the disease by the examination of urine on the basis of appearance of urine. It is useful to find out aggravated body elements. These observations are mentioned in the following chart.

INDEX	Conditions	Urine appearance
1	Vata aggravated diseases	Panduvarna (whitish) or slightly 'Nilam' (Bluish).



2	Pitta aggravated	yellowish or Raktavarna (reddish)
3	Kapha dominated	“Phenayukta”, i.e., frothy or Snigdha (cloudy).
4	Rakta aggravated	Snigdha, Ushna (hot) and resembles blood.
5	combined 2 DoshaS	mixed colours
6	Sannipata state (2 Doshas)	Krishna varna (blackish)
7	Ajirna’ (indigestion)	Tandulodaka (rice water).
8	NavinaJwara (acute fever)	Smoky, affected & passes more urine (BahuMutrata)
9	Vata Pitta jwara	smoky, watery and hot.
10	Shlesma-Pitta jwara	polluted and is mixed with blood
11	Vata Shlesmajwara	whitish with air bubbles
12	In Jirna (Chronic) jwara	yellowish and red.
13	In Sannipatajwara -	mixed shades depending on the Dosha involvement.

This is a special Ayurvedic urine examination method. Prognosis of disease by the examination of urine through the spreading nature of the oil.

In this examination, urine is kept in a broad vessel & a drop of oil is placed in the centre of urine. Then the direction of drop is observed & diagnosis is made.

- If inserted oil spreads quickly over the surface of urine, that disease is curable.
- If the oil does not spread it is considered as difficult to treat.
- If the dropped oil directly goes inside and touches the bottom of the vessel, then it is regarded as incurable.
- If the oil spreads in the direction of (east) the patient gets relief.
- If the oil spreads in the south direction, the individual will suffer from fever and gradually recover.
- If the oil spreads in the northern direction, the patient will definitely be cured and become healthy.
- If the oil spreads towards the west, he will attain happiness and health.
- If the oil spreads towards the Northeast, the patient is bound to die in a month's time; similarly, if the oil spreads into Southeast or Southwest directions, or when the instilled oil drop splits, the patient is bound to die.
- If the oil spreads on to Northwest direction, he is going to die anyway.
- It is a good prognosis if the oil creates the images of swan, lotus, chowri composed of the tail of Yak, arch, mountain, elephant, camel, tree, umbrella and house.
- If the tel attains the shape of a fish, then the patient is free of dosha and the disease can be treated easily.

○ If the drop of the tel attains the shape of creeper, a kind of drum, human being, pot, wheel or deer then the disease is considered as being more difficult to cure .

○ If the spreading oil creates the shapes of a tortoise, buffalo, honey-bee, bird, headless human body, instrument used in surgery the physician should not treat that patient as that disease is incurable.

○ If the shape of the drop of tel is seen as four-legged, three-legged, two-legged that patient will die soon.

In this way, urine analysis was put into practice by almost all medical streams in the Asian countries. It can be said that disease diagnosis was done mostly on the basis of physical examinations of urine. Of all Asian systems of medicine, Ayurved has explored urine analysis in detail.

Methods

Now a day some laboratory tests are available which are as follows.

- 1) Urine Routine & Microscopic Analysis.
- 2) Urine analysis by using urine test strip- It is definitely useful to quantify the following things.
 - Leukocytes – with presence in urine known as leukocyturia.
 - Nitrite – with presence in urine known as nitrituria.
 - Protein – with presence in urine known as proteinuria, albuminuria, or microalbuminuria.
 - Blood – with presence in urine known as hematuria.
 - Specific gravity.
 - ❖ Microscopic examination - The numbers and types of cells and/or material such as urinary casts can



yield a great deal of information and may suggest a specific diagnosis.

- Hematuria – associated with kidney stones, infections, tumors and other conditions.
- Pyuria – associated with urinary infections.
- Eosinophiluria – associated with allergic interstitial nephritis, atheroembolic disease.
- Red blood cell casts – associated with glomerulonephritis, vasculitis, or malignant hypertension.
- White blood cell casts – associated with acute interstitial nephritis, exudative glomerulonephritis, or severe pyelonephritis.
- (Heme) granular casts – associated with acute tubular necrosis.
- Crystalluria – associated with acute urate nephropathy (or acute uric acid nephropathy, AUAN).
- Calcium oxalatin – associated with ethylene glycol.
- Waxy casts – associated with chronic renal disease.

Some other methods of urine analysis are.

- ❖ Urine culture for urinary tract infection.
- ❖ Ictotest – to analyze the destruction of old red blood cells in the urine.
- ❖ Hemoglobin test –to analyze hemorrhage in the urinary system.

Result and Discussion:

It is necessary to obtain a urine sample. It will be communicated to you by your healthcare professional what kind of urine sample is required. Urine can be collected in two main ways: clean catch urine specimen collection and 24-hour urine collection.

The sample is delivered to a laboratory, where the following are checked:

COLOR AND APPEARANCE OF THE BODY

How the urine sample appears to the unaided eye:

- Is it hazy or clear?
- Is the color pale, dark yellow, or something else?

MICROSCOPIC APPEARANCE

Under a microscope, the urine sample is inspected to:

- Examine for the presence of any cells, mucus, urine crystals, urinary casts, and other materials.
- Find any microorganisms or bacteria.

CHEMICAL TESTS (urine chemistry)

- The urine sample is tested for chemicals using a specific strip, often known as a dipstick. Chemical

pads on the strip react chemically to substances of interest, changing color.

A few examples of certain urine tests that could be carried out to look for issues are:

- Red blood cell urine test
- Glucose urine test
- Protein urine test
- Urine pH level test
- Ketones urine test
- Bilirubin urine test
- Urine specific gravity test

How to Prepare for the Test

Urine colored differently with certain medicines is not an indication of a medical condition. If you take any medications that may influence test results, your provider may advise you to stop.

Among the medicines that can alter the color of your urine are:

- Chloroquine
- Iron supplements
- Levodopa
- Nitrofurantoin
- Phenazopyridine
- Phenothiazine
- Phenytoin
- Riboflavin
- Triamterene

How the Test will Feel

There is no discomfort associated with the test; it just requires regular urination.

Why the Test is Performed

One option for a urinalysis is:

- As a component of a standard physical examination to look for early disease indicators
- To keep an eye on you if you are receiving treatment for diabetes or kidney disease, or if you exhibit any symptoms of these illnesses
- To see whether there is blood in the urine
- To identify a urinary tract infection

Normal Results

The color of normal urine can range from nearly colorless to dark yellow. Urine may become red from particular foods like blackberries and beets.

Urine typically does not contain bilirubin, glucose, ketones, or protein. Urine typically does not contain the following substances:

- Hemoglobin
- Nitrites
- Red blood cells



- **White blood cells**

The normal value ranges in various laboratories may differ slightly. Different measures or samples are tested in different labs. See your provider about the significance of the test results that pertain to you.

What Abnormal Results Mean

An illness such as the following could be the cause of abnormal results.

- Kidney disease
- [Urinary tract infection](#)
- [Kidney stones](#)
- Poorly controlled diabetes
- [Bladder or kidney cancer](#)

You can talk with your provider about the outcomes.

Risks

There are no risks with this test.

Considerations

Because the findings are interpreted using a color chart, if a home test is performed, the person reading the results must be able to distinguish between colors.

Conclusion:

The field of automated urinalysis has advanced significantly in the last 20 years. Automated test strip reading adds value, and devices based on flow cytometry and microscopy both produce accurate, clinically relevant results. Turnaround times could be further decreased with increasing incorporation of current technologies. This work aims to provide an overview of the nine clinical aspects of urine temperature and demonstrate the clinical importance of variations in these qualities. Key clinical characteristics of urine linked to particular illnesses are covered, including cholelithiasis, asthma, osteoarthritis, and cancer.

References

1. www.siddham.in
2. vikaspedia.in/health/ayush/siddha
3. Riley RS, McPherson RA. Basic examination of urine. In: McPherson RA, Pincus MR, eds. *Henry's Clinical Diagnosis and Management by Laboratory Methods*. 24th ed. Philadelphia, PA: Elsevier; 2022:chap 29.
4. Sobel JD, Brown P. Urinary tract infections. In: Bennett JE, Dolin R, Blaser MJ, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 9th ed. Philadelphia, PA: Elsevier; 2020:chap 72.

5. Rappay L. A guide to Tibetan medical urinalysis. *Acupunct Electrother Res*. 1986;11(1):25-43. doi: 10.3727/036012986816359210. PMID: 2872777.
6. Oyaert M, Delanghe J. Progress in Automated Urinalysis. *Ann Lab Med*. 2019 Jan;39(1):15-22. doi: 10.3343/alm.2019.39.1.15. PMID: 30215225; PMCID: PMC6143458.