

**BIOCHEMISTRY OF URINE****A.A. Davletbaeva****2nd Pediatrics Faculty, Group 220, Tashkent State Medical University****Khurshida Najmiddinovna Akbarkhodjaeva****Scientific Supervisor: Candidate of Biological Sciences****Department of Medical and Biological Chemistry, Medical Biology,****Biophysics and Medical Informatics, Tashkent State Medical University****ARTICLE INFO**Received: 8th May 2026Accepted: 11th May 2026Online: 20th May 2026**KEYWORDS****ABSTRACT**

Biochemical examination of urine is an important method of laboratory diagnostics that allows assessment of the functional state of the kidneys, urinary system, and metabolic processes in the body. Urinalysis helps detect diseases of the kidneys, liver, endocrine system, and metabolic disorders at early stages. Urine biochemistry is widely used in clinical medicine because it provides valuable information about pathological changes occurring in the body. Early laboratory diagnosis significantly improves treatment outcomes and prevents severe complications. Modern biochemical methods of urine analysis are highly informative, accessible, and essential for routine medical practice.

Relevance.

Biochemical examination of urine is an important method of laboratory diagnostics that allows assessment of the functional state of the kidneys, urinary system, and metabolic processes in the body. Urinalysis helps detect diseases of the kidneys, liver, endocrine system, and metabolic disorders at early stages. Urine biochemistry is widely used in clinical medicine because it provides valuable information about pathological changes occurring in the body. Early laboratory diagnosis significantly improves treatment outcomes and prevents severe complications. Modern biochemical methods of urine analysis are highly informative, accessible, and essential for routine medical practice.

Aim.

The aim of this work was to study the main biochemical indicators of urine, their diagnostic significance, and their role in identifying various pathological conditions.

Methods and Results.

Urine is the final product of metabolism formed in the kidneys as a result of blood plasma filtration, reabsorption, and secretion processes in the nephrons. A healthy person excretes approximately 1–2 liters of urine per day. Normal urine consists of about 95% water and contains urea, uric acid, creatinine, ammonia, mineral salts such as sodium, potassium, calcium, chlorides, phosphates, sulfates, and pigments known as urochromes.

The main biochemical indicators of urine include protein, glucose, ketone bodies, bilirubin, urobilinogen, creatinine, urea, and uric acid. Normally, protein is absent or present only in trace

amounts. Proteinuria may occur in glomerulonephritis, nephrotic syndrome, pyelonephritis, arterial hypertension, and diabetes mellitus. Glucose is normally absent in urine; glucosuria is observed in diabetes mellitus, kidney diseases, and endocrine disorders. Ketone bodies are detected in diabetic ketoacidosis, starvation, prolonged vomiting, and fever. Bilirubin is absent under normal conditions but appears in viral hepatitis, obstructive jaundice, and liver cirrhosis. Increased urobilinogen levels are associated with hemolytic conditions and liver diseases. Creatinine reflects muscle metabolism intensity and kidney function, while urea characterizes protein metabolism and the excretory function of the kidneys. Elevated uric acid levels are observed in gout, leukemia, and increased cellular breakdown.

Biochemical urinalysis is used for the diagnosis of kidney and urinary tract diseases, diabetes mellitus, liver disorders, disturbances of water-salt balance, and inherited metabolic diseases. The obtained results confirmed that biochemical urine analysis is an effective and informative diagnostic method for evaluating the condition of various organs and systems.

Conclusion.

Urine biochemistry is an accessible, informative, and widely used diagnostic method. The study of biochemical urine indicators makes it possible to detect pathological changes in the body at an early stage, evaluate disease severity, and monitor treatment effectiveness. Therefore, biochemical examination of urine remains an essential tool in modern clinical and laboratory diagnostics.

References:

1. Harper's Illustrated Biochemistry / Rodwell V.W., Bender D.A., Botham K.M., Kennelly P.J., Weil P.A. — New York: McGraw-Hill Education, 2018.
2. Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics / Burtis C.A., Bruns D.E. — Elsevier, 2019.
3. Clinical Biochemistry / Marshall W.J., Lapsley M., Day A.P., Ayling R.M. — Churchill Livingstone Elsevier, 2018.