

Chemical examination of urine by wet method

Previously, color and precipitation reactions carried out in the so-called "wet way" (in test tubes) were used to detect pathological components of urine. Their principles are summarized in the table:

Principles of determination of pathological components of urine using color and precipitation reactions carried out in test tubes

Analyt	Principle of reaction	Individual exams
Protein	protein denaturation	<ul style="list-style-type: none">■ trial with sulfosalicylic acid■ Heller's test (with concentrated HNO_3)■ boiling test
Hemoglobin	pseudoperoxidase activity of heme iron – catalyzes the oxidation of suitable chromogens to colored products hydrogen peroxide	<ul style="list-style-type: none">■ Heitz-Boyer test (oxidation of reduced phenolphthalein)■ benzidine test (oxidation of o-tolidine or tetramethylbenzidine)
Glucose	non-specific tests based on the reducing properties of glucose	<ul style="list-style-type: none">■ Fehling test (reduction of Cu^{2+})■ Benedict test (reduction of Cu^{2+})■ Nylander test (reduction of Bi^{3+})
Ketone bodies	reaction with sodium nitroprusside in an alkaline medium to form a purple complex	<ul style="list-style-type: none">■ Legal's reaction■ Lestrade's test
Bilirubin	oxidation of bilirubin to green biliverdin or blue bilicyanin	<ul style="list-style-type: none">■ Rosin test (with iodine)■ Gmelin test (with concentrated HNO_3)
Urobilinogen	reaction of urobilinogen with 4-dimethylaminobenzaldehyde in an acidic environment to form a colored condensation product	<ul style="list-style-type: none">■ Ehrlich test

Links

References

- SCHNEIDERKA, Petr, et al. *Kapitoly z klinické biochemie*. 2. vydání. Praha : Karolinum, 2004. 365 s. ISBN 80-246-0678-X.