

# Ketones in the urine

By the term "ketones" we mean **acetoacetic acid, acetone and  $\beta$ -hydroxybutyric acid**. Increased excretion of ketone bodies urine indicates increased lipolysis and increased formation of acetyl-CoA, which due to insufficient utilization of glucose in the absence of insulin it is not metabolized normally in the Krebs cycle. The result is a buildup of acetyl-CoA, which condenses to acetoacetic acid. A larger part of acetoacetic acid is reduced to  $\beta$ -hydroxybutyric acid in the liver, a smaller part spontaneously decarboxylates to acetone<sup>[1]</sup>.

Determination of ketone bodies in the urine is especially important in type 1 diabetics. We do not find ketone bodies in the urine of properly treated diabetics. Their presence indicates metabolic ketoacidosis and is accompanied by hyperglycemia. Small amounts of ketone bodies in the urine may appear during weight loss or starvation and in pregnancy. Ketonuria can also indicate disorder of tubular functions, when there is insufficient resorption of ketone bodies.

The main representative of ketone bodies in urine is  $\beta$ -hydroxybutyric acid, which makes up about 60-70%, acetic acid is represented by about 30-35%, and acetone is only a few percent

## Links

### Related Articles

- Glucose in urine
- Glycemia

### References

1. MURRAY, Robert K - GRANNER, Daryl K - RODWELL, Victor W. *Harper's Illustrated Biochemistry*. a Lange medical book edition. Lange Medical Books/McGraw-Hill, 2006. 692 pp. pp. 190-194. ISBN 978-0-07-125300-0.