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Free and conjugated phenolic compounds in blood of high-yielding cows suffering from ketosis

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The aim of this work was to establish the changes and correlation between the level of β-hydroxybutyric acid in the blood and the content of free phenols, phenol sulfates and phenol glucuronides in the blood of healthy high-yielding cows of Ukrainian black-and-white milk breed, suffering from subclinical and clinical forms of ketosis.

According to the results of the clinical examination and rapid diagnosis on the content of ketone bodies in the blood, highly productive cows were divided into three groups: clinically healthy (n=10), suffering of subclinical (n=15) and clinically form of ketosis (n=8).

While analyzing the content of β-hydroxybutyric acid in the blood, its true growth ($p<0,001$) in cows with subclinical and clinically expressed ketosis compared with healthy ones, respectively, in 3,3 and 7,2 times, was established.

The data obtained indicate a tendency to increase the content of free phenols during subclinical form of ketosis, compared to healthy ones, and significantly higher content in sick cows (21,80 ± 0.57 μmol/l), which is by 16,5% ($p <0,001$) higher, compared to healthy and by 14,6 % ($p <0,01$), compared to subclinical form of ketosis.

The content of phenols conjugated with sulfuric acid was highest and significantly higher, compared to healthy, by 11,3% ($p <0,05$), only in clinically ill cows (23,21 ± 0,83 μmol/l).

It was discovered that the content of phenols conjugated with glucuronic acid in the subclinical course and in clinically ill cows was higher, compared to healthy, by 10,9% ($p <0,05$) and 18,0% ($p <0,05$).