

## HAPTOGLOBIN IN ROUTINE ANALYSIS OF BOVINE SERUM

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### Background

Haptoglobin (Hp) has proven to be very valuable for the analysis of the causes of important bovine diseases. Hp concentration, for example, is increased after parturition especially in those cows that developed retained placenta, mastitis or abomasal displacement (DA). DA may be considered to be a result of acute phase reaction. Hp increases during acute parturition stress. However, little is known about the usage and benefits of Hp in routine diagnostics in cattle.

### Objective

The investigation aimed at checking the diagnostic, pathophysiological and prognostic information of the Hp analysis during the routine operation of a ruminant clinic.

### Material and Methods

Hp analyses were carried out a) in 116 healthy HF-cattle as well as 126 ill cattle in various farms and b) in 141 ill cows of our ruminant clinic. Determinations: Hp was determined using the test set by Tridelta (Dublin), metabolic parameters with the Hitachi 704 analysis machine (Bayer) and blood cells with the hematological system Technicon 1 (Bayer).

### Results

a) The highest Hp concentrations were found in cows as well as calves with pneumonia (range 1.6 – 4.8 g/l), followed by cows with DA (range 1.0 – 3.5 g/l) as well as cows with mastitis and endometritis (range 0.5 – 2.8 g/l).

b) The patients of the ruminant clinic, all ill with DA as well as additional troubles, had the following Hp concentrations (g/l, median): enteritis 1.10, bronchitis 0.95, nephritis 0.92, mastitis 0.45, endometritis 0.40, left side DA 0.46, right side DA 0.38 and laminitis 0.22.

Hp correlated significantly with the following parameters ( $p < 0.05$ ): Fe -0.40, AST -0.30, GLDH -0.30, AP -0.30, Ca -0.30, BHB -0.20, urea 0.20, albumin -0.20, CK -0.20, GGT -0.20, LDH -0.20, ALT -0.20, bilirubin II -0.20. Neither the number of leukocytes nor other blood cells correlated significantly with the Hp concentration.

By comparing recovered cows and cows with exitus letalis, no significant differences occurred, that is the Hp analysis has no prognostic information.

Hp concentration increases especially in diseases with acute inflammation (pneumonia, mastitis, enteritis, retained placenta/endometritis). Hence in extremely high Hp concentrations the mentioned organ diseases can be defined by differential diagnosis. Regarding the Fe-Bond to the APP transferrin, the negative correlation with Fe becomes clear. Because the clinic's patients were intensely medicated, the metabolic parameters mentioned above could be stabilised relatively quickly, which means that the increased concentrations or activities are normalised, thus the negative correlation with Hp is explained. In untreated cattle of practising farms, the Hp concentrations correlated in most diseases positively ( $p < 0.05$ ) with protein as well as negatively with albumin and AST-activity.

The lack of prognostic information is surprising and could be interpreted as a consequence of the intensive medication that influenced the tested parameters.

### Conclusions

In routine analysis in cattle, Hp indicates serious inflammation (pneumonias, mastitis, enteritis). Significant correlations with metabolic parameters exist mainly with Fe, less so with other metabolic parameters. Hp has no prognostic value with regards to the outgoing of the disease.