

DETERMINATION OF SERUM ALBUMIN IN LARGE ANIMALS

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The serum albumin is most commonly photometrically determined by reaction with bromocresol green (BCG) or bromocresol purple (BCP) in biochemical laboratories. Both colors are known to react differently to albumin of vary animal species, and BCP shows more significant differences in this regard. Our aim was to examine the reactions of these dyes with serum albumin from large animals and compare these results with electrophoresis as a reference method. On this basis, decide on the suitability of these dyes for the determination of serum albumin in cows, calves, goats and horses.

Commercial diagnostic kits were used for the analyzes and were followed as recommended by the manufacturers. Measurement was performed on the *Cobas Mira Plus* automatic analyzer. Electrophoretic separation was performed on an agarose gel with a *Sebia* diagnostic kit. Blood was collected from the animals in a conventional manner and processed immediately or frozen (-18°C) until analysis was performed.

In the determination of albumin in cows, higher results were obtained by the BCG method ($P<0.05$). However, this increase in the results averaged about 1 g/l. On the other hand, using BCP, the differences were statistically significant ($P<0.001$) and were up to 15 g/l lower. In calves, the BCG method provided an average of about 2.0 g/l higher ($P<0.01$), but the BCP method was again more than 10 g/l lower ($P<0.0001$). In cattle, statistically significant differences were not measured by the BCG method, again in the BCP method, statistical significance ($P<0.01$) and about 8 g/l lower results. Regarding to horses, both methods were not statistically significant, and the BCP method had very good agreement with the results obtained by electrophoresis (mean difference of approximately 0.3 g/l).

Determination of serum albumin belongs to routine biochemical examinations with simple analysis. Despite the simplicity of performance, however, the analysis of albumin is connected with some difficulties. One of this difficulties is calibration of the method. The certified reference material ERM DA 470k/IFCC has been used less efficiently for the metrological continuity of work calibrators. In addition, there is not enough consistency among manufacturers using the same methods, and methodological differences can cause deviations of up to 17 %. In spite of all the differences numerous papers in human medicine show that, the BCP method has better results and it is recommended to use this method. However, our results show that BCP method completely fails in veterinary medicine, and although the BCG method gives slightly better results than electrophoresis (about 1–2 g/l higher) and these results can be used in clinical practice. We don't recommend to use the BCP method in veterinary laboratories. Also field practitioners who have samples analyzed in human laboratories should be informed that the laboratory uses the BCG method.

Keywords: SERUM ALBUMIN, BROMKRESOL PURPLE, BROMKRESOL GREEN, ELECTROPHORESIS