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Serum Haptoglobin in Some Domestic Mammals

In a previous paper (5) the serum Hp content has been valuated in several domestic mammals by the JAYLE's method (1). It has been noticed a low concentration in ruminants, as a remarkable influence that the zoological origin of hemoglobin and serum has on the result of analysis.

The enzymatic character of the valuation with the JAYLE's method (1) as that of OWENS *et al.* (7) could explain the differences of the peroxidasic activity of haptoglobin-hemoglobin complex (Hp-Hb), according to the taxonomic origin of both components. So, the obtained values in the higher primates (Gorilla and Chimpanzee) seem to be near to the human species (8).

We have believed useful to analyze again a group of mammals by a method no-enzymatic as the NYMAN's method (6). In this we can determine by electrophoresis the hemoglobin binding capacity of a serum, by the presence of free Hb, which is differentiate to the Hp-Hb complex because of its different electrophoretic movility. Besides, it has been demostrated how the performance of such a complex is made between any serum and hemoglobin of different species (3, 4).

In the present report 89 animals belowing to six different species (horse, ass, lamb, pig, bull and goat) have been analyzed.

It have been used indistintly serums obtained by sudden coagulation and plasma from heparinizated blood. All analyzed samples were exent of hemolysis.

The NYMAN's technique (6) has been adopted in cellulosa acetate electrophoresis. It have been used Cellogel strips (Chemitron, Milano) of 4 × 17 cm or 2 × 17 cm, applying the samples by Chemitron appliers (the type semimicro for horses serum, ass, lamb; the macro one in the other species, duplicating the application). The buffer used is of trisglicocola, *p*H 6.7, the voltage of 150 to 200 V, intensity 4-5 mA, and 60 to 90 minutes time.

The hemoglobin have been obtained from human blood and the solution have been valuated according to the WONG's method (10).

The mixtures of serum and different concentrations of hemoglobine have remained to 30 to 45 min at room temperature before to perform the electrophoresis.

The develop of the strips has been achieved with bencidine (0.06 M bencidine in ethyl alcohol, acetic acid, water: 5:2:3).

The presence of Hb free band shows the saturation level of serum, and in this

Table I. *Haptoglobin concentration (m±σ) in several mammiferous species.*

Specie		Number	Haptoglobin g Hp/1.000
Horse *		10	1.560±0,04
Ass *		10	0.975±0.04
Pig *		12	0.523±0.04
Lamb	♂	7	0.107±0.006
	♀	20	0.089±0.006
Bovine	♂	5	0.0017±0.0004
	♀	10	0.0013±0.0004
Goat	♂	5	0.0234±0.003
	♀	10	0.0195±0.003

* Both sex.

way it is obtained the binding capacity average, Hb-BC (Hemoglobin-binding capacity: mg Hb/100 ml serum).

In the Table I it is showed the obtained results in haptoglobin concentrations (mg Hp/100 ml serum) which is performed multiplying the Hb-CB average by 0.013 (4).

The application of electrophoretic method let us to determine with precision the real haptoglobin content in different species of animals, inclosed the species whose average value is lower to 0.1 g Hp/1,000.

The comparison of the present result with the exposed in the former paper (5) shows the low Hp averages in Artiodactyla (Ruminantia), respect to Suiformes and Perissodactyla and to Rodentia (rat, mouse, guinea-pig) and Lagomorpha, analized by other authors (2, 9) with electrophoretic methods, give averages never lower than 0.24 g Hp/1,000.

The bovine specie presents low averages, so the goat, in which the accuracy limits of method are over came (0.05 g Hp/1,000 ml) (4).

On the contrary, in the remainder species, the techniques applied give homogeneous results, and individual variations are few, which give more signification to the averages.

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