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The Complement System of the Goat

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Complement is a central component of the innate immune system which is involved in host defense against infectious agents. The complement system may be activated by three different pathways: the classical, the lectin and the alternative pathway. The complement system in mammals has been well described, and it is clear their complement systems are very similar, however, there are scanty research studies on goats. The aims of the present study were to contribute with new knowledge developing an efficient haemolytic assay for goats, affordable and easy to find worldwide; and to isolate the major complement system proteins from goat plasma, in order to raise antibodies to develop quantitative assays. The isolated proteins were C1q, the first protein involved in the classical pathway, factor H, because of its importance in the regulation of the alternative pathway, and C3, the most abundant protein which forms part of all three pathways. The main results were: 1) The commonly used sheep erythrocyte sensitized with rabbit antibodies were not sensitive to lysis by goat serum, but the combination of human RBC plus rabbit antibodies was the best option found for goat complement assay. A buffer based on HEPES instead of the classical veronal (barbitone) was developed. 2) Three proteins were isolated from goat serum: factor H, C1q and C3 and these were compared with the corresponding human proteins. A novel affinity chromatography technique was developed for isolation of factor H. In conclusion, human RBC plus rabbit antibodies were a suitable option for haemolytic assays, as well as the new buffer based on HEPES. The isolated proteins are similar to the human counterparts.