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Preliminary Report

Interchangeability of Components between C'_3 in Human and Guinea pig Complement

There has been much progress by many workers in the isolation and purification of C'_3 in guinea pig serum. Recently, Rapp *et al.*[1,2] reported that C'_3 in guinea pig serum could be separated into two components either by chromatography or by precipitation with methanol and acid. Further, C'_3 has been isolated from human serum, although the preparation obtained was incapable of reacting with $EAC'_{1,4,2}$ according to Pillemer[3].

We became interested in the serological characteristics of C'_3 through studies on the properdin system in 1956. In the course of properdin assay by zymosan, we happend to find that a combination of appropriate amounts of human R_3 and guinea pig R_3 caused hemolysis of sensitized sheep erythrocytes suspension (EA). This interesting fact leads us to a comparative study of human and guinea pig C'_3 components. The separation of the components of C'_3 was studied with human and guinea pig R_3 by chromatography by the method of Rapp *et al.*[2].

It was found that human C'_3 could be separated into two components C'a' and C'b' like those of guinea pig C'_3 (C'a, C'b). Further, human R_3 in combination with either the C'b of guinea pig serum or the C'b' of human sernm caused hemolysis of sensitized erythrocytes, whereas it did not in combination with either C'a (guinea pig) or C'a' (human). On the other hand, guinea pig R_3 in combination with either C'a (guinea pig) or C'a' (human) caused hemolysis, whereas it did not in combination with either C'b (guinea pig) or C'b' (human).

This suggested that whereas human R_3 has been depleted of its C'b' rather than its C'a' component, guinea pig R_3 has been depleted of its C'a rather than its C'b component. Thus guinea pig R_3 in combination with human R_3 causes hemolysis of EA, because the combination forms a complete complement system.

Work is in progress on the manner in which these incomplete systems (R_3 human and R_3 guinea pig) serve as complements to one another.

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* Editor's Note: After this article had been received, we happened to know that A. B. Taylor and M. A. Leon had reported more advanced results on C'_3 components in the Federation Proceedings (Vol. 20 Part I, p. 19, 1961), which arrived at this institute in the end of April.

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