

Identification of the Origin of Animal Protein by Agar-gel Diffusion

THE identification of the origin of various animal proteins proved possible by the agar-gel double diffusion technique¹. Antisera were prepared in rabbits by multiple injections of alum-precipitated animal sera. Antisera were prepared from animal sera and tissue extracts, tick blood-meals, sun-dried meat or biltong and uncooked sausage meat. They were diffused overnight at 25° C against known antisera simultaneously with the homologous antigen. The agar gels were prepared from 1 per cent agar in borate buffer at pH 8.6 and were about 3 mm thick. A seven-well pattern was used consisting of a 9.5-mm diameter central well set 10 mm from the 7-mm diameter peripheral antigen wells.

Precipitation occurred, and the degree of precipitation appeared to be correlated to the zoological family of the animal of origin. For example, pig and horse sera used as antigens reacted with buffalo antiserum, but the precipitation bands were not as prominent as that which formed with sheep serum used as an antigen (Fig. 1). Within a sub-family, spur formation distinguished different genera (Fig. 2).

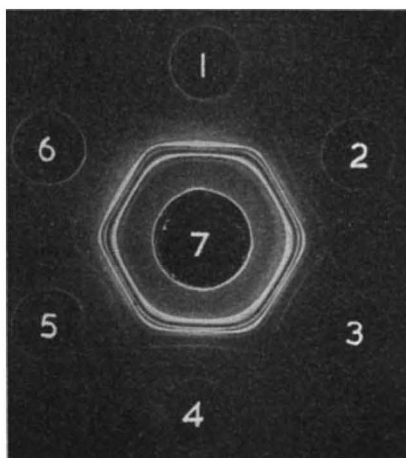


Fig. 1. Wells 1, 3 and 5 contain buffalo antigen; 2, horse antigen; 4, sheep antigen; 6, pig antigen; 7, unabsorbed rabbit anti-buffalo serum

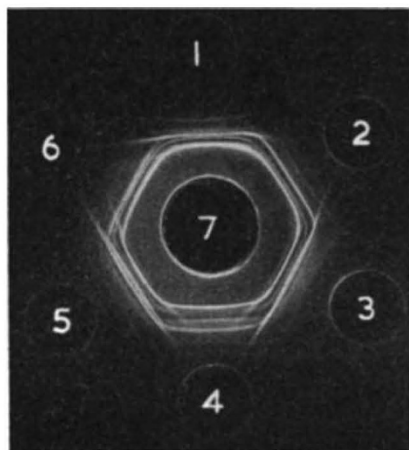


Fig. 2. Wells 1, 3 and 5 contain ox antigen; 2, buffalo antigen; 4, wildebeest antigen; 6, eland antigen; 7, unabsorbed rabbit anti-ox serum

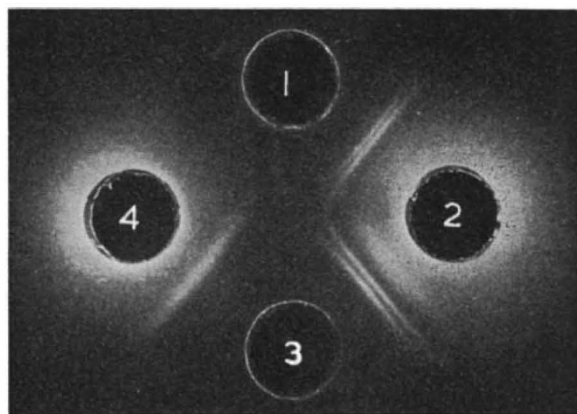


Fig. 3. Well 1 contains horse antigen; 2, unabsorbed rabbit anti-zebra serum; 3, zebra antigen; 4, absorbed rabbit anti-zebra serum

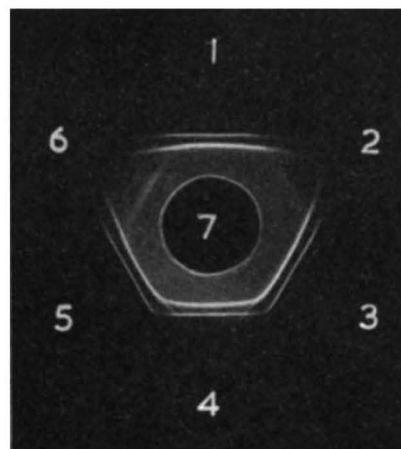


Fig. 4. The peripheral wells contain antigen from six different cattle. The centre well contains rabbit anti-ox serum

The identification of species within a genus was possible when absorbed antiserum was used. For example, an antiserum to zebra antigen reacted with both zebra and horse antigens but when absorbed with horse antigen it reacted only with zebra antigen and not with horse antigen (Fig. 3). Antigens in the form of sera from individual animals of the same species did not form spurs (Fig. 4).

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¹ Ouchterlony, O., *Ark. Kemi. Mineral. Geol.*, B, 26, 1 (1948).

PHYSIOLOGY

Binding of Calcium Ion to Lecithin Film

THE calcium ions in the membrane appear to be involved in some way with the unknown physico-chemical reactions which occur in the membrane and which may be responsible for the changes in the membrane permeability or the membrane potential of excitable tissues^{1,2}. Inasmuch as the membrane is composed of lipoproteins which possess negative phosphoric sites of phospholipids, it is likely that the calcium ions are bound to these sites. The experiment recorded here, therefore, was projected to