

### Immunochemical behaviour of proteins in human sweat

One of us (M. J.) found proteins of mucoprotein character to be present in human sweat: the substance is soluble in 20 % sulphosalicylic acid, yields hexosamines on hydrolysis and in polarography has a catalytic effect in  $\text{Co}^{3+}$  solution<sup>1</sup>. We have now studied the immunochemical behaviour of proteins in human sweat in an attempt to define their specific antigenic properties.

Using a double-diffusion technique with the gel of OUCHTERLONY<sup>2</sup>, we found four precipitation lines, when natural sweat was tested against a rabbit immune serum against sweat proteins (obtained by immunizing a rabbit with protein, which had been isolated from a greater quantity of collected thermal sweat of a number of normal adults); when a normal human serum was tested against the rabbit immune serum against sweat proteins (RISAS), two precipitation lines were found (Fig. 1).

The first of the four precipitation lines (sweat against RISAS) is formed by deviation of the end of the first precipitation line of normal human serum-RISAS reacting system, due to the lower antigen concentration in sweat in comparison with the corresponding antibody (Reaction type 1a, identity according to OUCHTERLONY); this precipitation line is not present in every sample of human sweat (Fig. 2).

The second of the four precipitation lines (sweat against RISAS), does not correspond to any of the two precipitation lines of normal human serum-RISAS reacting system (Reaction type, non-identity according to OUCHTERLONY).

The third precipitation line (sweat against RISAS) shows that it is identical with the second precipitation line of normal human serum-RISAS reacting system (Reaction type 1, identity according to OUCHTERLONY).

The fourth precipitation line (sweat against RISAS) does not correspond to any of the two precipitation lines of normal human serum-RISAS reacting system, and crosses them (Reaction type, non-identity according to OUCHTERLONY).

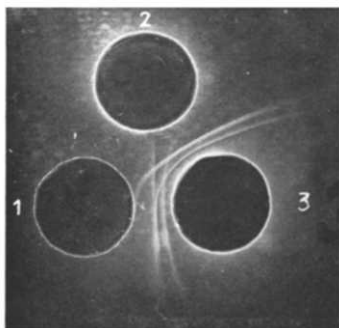


Fig. 1. Photograph of precipitation reactions. 1, human sweat; 2, normal human serum; 3, rabbit immune serum against sweat proteins.

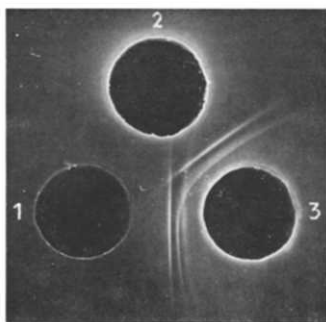


Fig. 2. Photograph of precipitation reactions. 1, human sweat; 2, normal human serum; 3, rabbit immune serum against sweat proteins.

Abbreviation: RISAS, rabbit immune serum against sweat proteins.

These results show that two of the four protein components present in sweat are probably also present in normal serum, whereas the other two were not found in serum.

Using an immunoelectrophoresis microtechnique<sup>3</sup>, five precipitation lines were found when the immunoelectrophoretic pattern of sweat was tested with the rabbit immune serum against sweat proteins (Fig. 3).

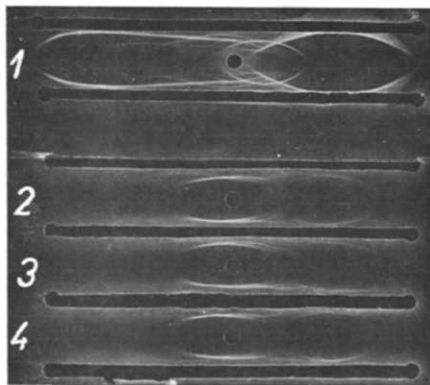


Fig. 3. Photograph of immunoelectrophoresis precipitation pattern of human sweat in comparison with human serum. 1, normal human serum (in longitudinal basins a rabbit immune serum against human serum); 2, 3, 4, concentrated human sweat (in longitudinal basins a rabbit immune serum against sweat proteins).

At present we are trying further to characterize the protein components present in human sweat.

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