Serological Observations on Patients with Chromium-Eczema and Chromium-Sensitized Guinea-Pigs

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An attempt was made to detect circulating antibodies in the blood of patients, suffering from sensitization to chromium and of Cr-sensitized guinea-pigs. The following methods were applied:

- (1) The passive haemagglutination-test according to Boyden [1].
- (2) The micro-immuno-electrophoresis method according to Scheidegger [3].
- (3) The contra-diffusion method according to Ouchterlony [2].

According to Boyden O-erythrocytes were defibrinated, rinsed in a physiological salt solution and suspended in physiological solutions of 1 % Cr(III)-chloride in order to bind the Cr(III) to the surface of the erythrocyte. Hexavalent Cr(VI)-solutions cannot be used, as the Cr(VI) penetrates through the cell membrane. The erythrocytes were mixed with inactivated antiserum at a temperature of 25 °C in order to demonstrate the presence of circulating antibodies by agglutination of the erythrocytes after 2 to 24 h. From 2 to 12 weeks after sensitization no circulating antibodies were found.

Proteins of the antiserum were separated electrophoretically, by applying a 1 % agar solution. Next the antigen and the antibody were allowed to move towards each other by diffusion at 37°C for 48 h. The encounter is shown by the white line of their precipitate.

Applying the Ouchterlony technique without preceding electro-phoresis the proteins of the antiserum were allowed to diffuse towards the antigen. The following possible antigens were investigated:

Potassium-bichromate 1 %.

The serum of a non-sensitized guinea-pig, diluted with 1, 2, 4 or 8 volumes of potassium-bichromate 1 %.

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(3) The homogenates of skin, lymphnodes or spleen and their sediments and supernatant fluids separately. The antibodies were the antiserum or a dialyzed extract of the skin.

The lines of protein precipitates found were not specific as compared to the blanks. Both techniques are known to produce positive results only when the right antigen is used. It therefore seems probable that the antigen used in our experiment was not the right one. However, the composition of the antigen is not yet known.

References

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