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AN INVESTIGATION OF COTTON-SEED GLOBULINS.

XXII. HEMAGGLUTINATING ACTIVITY OF THE 7S GLOBULIN

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UDC 547.962.5

We have previously reported the structure of the 7S globulin from cotton seeds [1]. Since many plant proteins are hemagglutinins, i.e., they are capable of agglutinating erythrocytes [2, 3], we have attempted to detect such activity in the 7S globulin.

For the agglutination reaction we used a suspension of rabbit erythrocytes and the soybean agglutinin obtained by a method described by Lis and Sharon [4], and also an extract of clover [5]. The active protein mentioned and the 7S globulin under investigation and its subunits were dissolved in a 0.9% solution of sodium chloride with an initial concentration of 4-5 mg/ml followed by twofold dilution to a concentration of 0.005 mg/ml. To 1 ml of solution was added 1 ml of a suspension of erythrocytes with $D_{520} = 1$; then the mixture was shaken and it was then kept at 37°C, with shaking after 0.5 and 1.5 h, and was left at 4-7°C for 16-18 h. The occurrence of agglutination was estimated visually [6]. A precipitate of erythrocytes in the form of a button or ring showed the absence of an agglutination reaction, while uniform distribution at the bottom of the tube showed a positive result. We found that the active proteins mentioned above and the 7S globulin agglutinate erythrocytes in concentrations not lower than 0.03 mg/ml, while both subunits do so in concentrations of not less than 0.005 mg/ml. Treatment of the erythrocytes with trypsin did not affect the agglutinating activity of the 7S globulin and its subunits.

On the basis of the results obtained, it has been shown that the 7S globulin of the cotton seeds is a phytohemagglutinin.

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