DIFFERENTIATION OF ACQUIRED B ANTIGENS ON HUMAN ERYTHROCYTES FROM GENETICALLY DETERMINED B ANTIGENS USING ANTI-B LECTINS FROM MARINE ORGANISMS

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Human erythrocytes may acquire blood-group B activity by adsorption of bacterial lipopolysaccharide, having similar chemical structure to that of the erythrocyte B antigen, onto their surface (Stratton & Renton 1959) or by the modification of genetically determined surface structures by bacterial deacetylase enzymes (Gerbal et al 1970). This communication describes attempts to detect artificially-produced, erythrocyte B antigens, with human anti-B serum, the anti-B lectin from the red alga Ptilota plumosa (Blunden & Rogers 1974) and the anti-BI lectin from the black, sea-bream, Spondyliosoma cantharus (Rogers 1978).

Erythrocytes with adsorbed B antigens were produced by exposing blood-group O erythrocytes to 1 mg/ml of purified lipopolysaccharide from Escherichia coli O_{86} prepared according to the method of Springer (1956).

Blood-group A_1 erythrocytes were deacetylated by treating the cells with 20 units/ml of N-acetyl-D-galactosamine deacetylase from E.coli K_{12} by the combined methods of Roseman (1957) and Marcus, Kabat and Schiffman (1964). Before testing the erythrocytes were further treated with papain (Rogers 1978).

When the group O cells, coated with lipopolysaccharide, were tested with human anti-B serum a titration value of 1:16 was recorded. The anti-B lectins from P.plumosa and S.cantharus failed to react with the lipopolysaccharide-treated cells. Appropriate controls gave the results expected.

Examination of the A_1 erythrocytes treated with deacetylase enzyme showed that anti-B serum gave a titration value of 1:16 with these cells. P.plumosa and S.cantharus lectins did not agglutinate the deacetylated erythrocytes. Appropriate controls performed satisfactorily.

These results indicate that acquired B antigens produced in vitro are not detected by the anti-B lectins from P.plumosa and S.cantharus. The distinction between genetically determined B antigens and those acquired from the erythrocyte environment is important in forensic science and blood transfusion practice and cannot be made readily with human anti-B serum. It is suggested that these highly specific anti-B lectins may prove useful for this purpose.

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