IBGRL RESEARCH PRODUCTS

NHS Blood and Transplant

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Antigen	Human Blood Group M (ISBT No.2001)
Clone	BRAC 30
Product Code	9500
Immunoglobulin Class	Rat IgG2c, kappa light chain

Antigen Description and Distribution

The blood group M antigen is a polymorphic antigen expressed on the major erythrocyte sialoglycoprotein, Glycophorin A (GPA, CD 235a). The complete amino acid sequence and sites of glycosylation of GPA are known. The M antigen is defined by serine and glycine at positions 1 and 5 respectively of GPA[1]. Glycophorin A is heavily glycosylated with numerous O- glycans containing sialic acid[2]. It is found on erythroid cells and the HEL erythroleukaemia cell line. There are approximately 2-10 x 10^5 GPA molecules per erythrocyte. Rare individuals lacking GPA are known[2]. Approximately 78% of English people are M positive.

Clone

BRAC 30 was made in response to human erythrocytes. BRAC 30 directly agglutinates MM and MN cells and in agglutination experiments titrates to 1/512. BRAC 30 also agglutinates NN erythrocytes but only titrates to 1/8. BRAC 30 titrates to 1/16 with NN Henshaw GPB variant erythrocytes and 1/256 with M^cN GPA variant erythrocytes. BRAC 30 fails to agglutinate M^kM^k or En(a-) (Finnish) erythrocytes, only weakly agglutinates NN positive S-s-U- erythrocytes but strongly agglutinates MM positive S-s-U erythrocytes. BRAC 30 agglutinates AET or DTT, trypsin and chymotrypsin treated erythrocytes but fails to agglutinate neuraminidase and pronase treated erythrocytes. By immunoblotting, following SDS-PAGE, BRAC 30 detects bands corresponding to Glycophorin A (GPA), GPA plus B and GPA dimer. BRAC 30 weakly reacts with membranes from NN erythrocytes and does not react with membranes from M^kM^k erythrocytes by immunoblotting.

To evaluate BRAC 30 as a blood grouping reagent, the culture supernatant was diluted 1/25 in PBS containing 1% BSA and tested against 30 known phenotype erythrocytes. The diluted supernatant strongly and directly agglutinated all the MM and MN phenotype erythrocytes and did not agglutinate any NN erythrocytes.

References

1. Reid ME, Lomas-Francis C, Olsson ML. (2012) The blood group antigen facts book, third Edition. Academic Press, London.
2. Anstee D.J. (1990) Vox Sang. **58**: 1-20 (Review).