



NHS Blood & Transplant
500 North Bristol Park
Northway
Filton
Bristol
BS34 7QH

Tel: +44 (0)117 921 7200
Fax: +44 (0)117 912 5796
Web: <http://ibgri.blood.co.uk>

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 GPA¹. Glycophorin A is heavily glycosylated with numerous O- glycans containing sialic acid². It is found on erythroid cells and the HEL erythroleukaemia cell line. There are approximately $2 \cdot 10^5$ GPA molecules per erythrocyte. Rare individuals lacking GPA are known². 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 1/128 with neuraminidase treated MM erythrocytes, 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 neuraminidase and AET treated erythrocytes but fails to agglutinate chymotrypsin, pronase or trypsin treated erythrocytes. By immunoblotting, following SDS-PAGE, BRAC 30 detects bands corresponding to Glycophorin A (GPA), GPA plus B and GPA dimer. BRAC 30 does not react with membranes from NN or 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).