



Original article

Frequency of Wr^a antigen and anti- Wr^a in Brazilian blood donors



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ABSTRACT

Background: Wr^a is a low-incidence antigen, which is antithetical to the high prevalence red blood cell antigen, Wr^b . Anti- Wr^a is a naturally occurring antibody that is found in approximately 1–2% of blood donors. The aim of this study was to determine the frequency of Wr^a and anti- Wr^a in Brazilian blood donors.

Methods: A total of 1662 Brazilian blood donors were molecularly analyzed using the SNaP-shot methodology to determine the WR^A/B alleles and to predict the frequency of the Wr^a antigen. To detect the anti- Wr^a , samples from 1049 blood donors were analyzed using a gel test with $Wr(a+)$ red blood cells. The serum was treated with dithiothreitol (DTT) to determine the immunoglobulin classes. Immunoglobulin (Ig)-G isotype classification was performed in a gel test using the IgG1/IgG3 card. A monocyte monolayer assay was employed to predict the clinical significance of IgG anti- Wr^a .

Results: Of the 1662 donors, only one sample had the $DI^{*02.03}$ allele in heterozygous predicting the $Wr(a+b+)$ phenotype. Anti- Wr^a was detected in 34 (3.24%) samples, 64.7% in females and 35.3% in males. Regarding the immunoglobulin class, eight (23.5%) cases of anti- Wr^a were classified as IgG and 26 (76.5%) as IgM. Of the eight cases of IgG anti- Wr^a , four were IgG1, two were IgG3 and three anti- Wr^a were not IgG3 or IgG1, and thus probably IgG2 or IgG4. The results of the monocyte monolayer assay showed that IgG anti- Wr^a might be of clinical significance.

Conclusion: This study shows a very low frequency (0.06%) of the Wr^a antigen in Brazilian blood donors. Additionally, it shows that the frequency of anti- Wr^a in this population is higher than previously reported.

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