positivo no teste de solubilidade foram confirmadas pelo teste de Falcização em lâmina e quando o HPLC era positivo foi realizada a eletroforese de Hb. Foram analisadas todas as doações no período de setembro de 2022 a junho de 2024. **Resultados:** No total, 12639 doações foram testadas em ambas as metodologias, sendo 130 (1,03%) doações com triagem indicativa de presença de Hb variante por HPLC. Destas, 103 indicaram a presença de HbS, 18 de HbC, 7 de HbD e 2 não apresentavam Hb variante na eletroforese de Hb. A triagem pelo teste de solubilidade apresentou 100 (0,79%) doações com teste positivo para HbS, todas confirmadas pela falcização e por HPLC. O teste de solubilidade falhou na identificação de 3 doações que foram identificadas apenas pelo HPLC. Desta forma, para a identificação de HbS o teste de solubilidade apresentou sensibilidade de 97,1% e especificidade de 100%, enquanto o HPLC demonstrou sensibilidade de 100% e especificidade de 99,8%. **Conclusão:** A triagem por teste de solubilidade é um teste bastante simples e barato, no entanto não identificou 100% das doações com HbS. O HPLC é uma técnica automatizada, que permite maior controle sobre o processo, além do conhecimento das demais variantes, o que pode otimizar o uso dos hemocomponentes em pacientes com hemoglobinopatias. No entanto, é uma técnica bastante onerosa e de difícil implantação em serviços de pequeno porte. Análises mais detalhadas são necessárias para identificar os casos de falha no teste de solubilidade e a custo-efetividade do HPLC.

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ANTIGENIC FREQUENCY OF ABO, RH, AND KELL BLOOD GROUPS IN BLOOD DONORS FROM MANAUS-AM

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Objective: This study aimed to detect and characterize the presence of ABO system antigens and determination of Rh (D, C, c, E, e, Cw) and Kell antigens in blood donors and recipients treated at Foundation of Hematology and Hemotherapy of Amazonas (HEMOAM). **Materials and methods:** This is a cross-sectional study with samples collected between October 2023 and December 2023 from blood donors at the HEMOAM. Participants in this study were repeat donors (minimum of 3 donations) registered at HEMOAM who signed the Informed Consent Form (ICF). For phenotyping, 5 mL of peripheral blood was collected from voluntary donors in EDTA tubes. The determination of the presence of ABO system antigens was performed by direct and reverse typing. For the determination of Rh (D, C, c, E, e, Cw) and Kell antigens, direct typing was used. However, in the case of RhD-negative phenotyping, a weak D test was performed using the indirect antiglobulin method. **Results:** A total of 1,455 blood donors were included in this study. The highest frequency in the ABO system was for the O phenotype (65.4%) and the lowest for AB (1.6%). For the Rh system, the most frequently found antigens were D (93.3%), e (93.5%), c (78.5%), and C (67.4%). However, Rh E (42.7%) was the least frequent in the population. We found 6 patients with Rh Cw positive. Approximately 2.9% of donors possess the K antigen. **Discussion:** Determining the profile of erythrocyte antigens and phenotypes in a local population assists blood centers, blood banks, and transfusion agencies in managing their inventories more effectively. The Amazonian population has a high rate of racial mixing, which contributes to a higher expression of the O phenotype due to the genetic heritage of Black, White, and Indigenous people. This study showed D-positive frequency of 93.3%, even above the Brazilian average. Similar results were found in other Brazilian regions, such as Rio Grande do Norte (88.9%), Belém (90.34%) and São Paulo (86.25%), corroborating our data. The frequencies this study for the Rh E, C, and C antigens were similar to those found in the state of Rio Grande do Norte and the metropolitan region of Belém in Pará, while the frequency of Rh E (42.7%) and Rh e (93.5%) was higher in our population. The prevalence of the K antigen found in our study (2.6%) is very low when compared to other Brazilian regions, such as the Northeast (6.7%) and South (7.1%) and 5.74%. Continuing this research, together with the implementation of expanded phenotyping programs, is essential to adapt and improve blood component management strategies, meeting the specific needs of the population to ensure an increase in the number of donors with the greatest possible compatibility. **Conclusion:** Although the prevalence of antigens found in this study shows similarities with other regions of Brazil, we found a higher frequency, above the national average, for the O phenotype and the D, E, and e antigens. The elevated prevalence of the O phenotype (65.4%) and the D antigen (93.3%) reflects the high rate of racial mixing in the Amazonian population, which is consistent with data from other Brazilian regions and impacts the allelic distribution of these phenotypes. The low frequency of the K antigen (2.9%) highlights the importance of a well-phenotyped donor bank to ensure the availability of compatible blood components, especially for patients with specific transfusion needs.

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