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BOOK OF ABSTRACTS

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Rua Dr. António Bernardino de Almeida, 400
4200 - 072, Porto
Portugal

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Blood Group Influence in Umbilical Cord Blood Immune Cell Profile

JOANA PINA[1], MELISSA OLIVEIRA[1], RICARDO FERRAZ[2] & ANDREIA GOMES[1]

1. BEBÉVIDA, CIÊNCIAS PARA A VIDA, S.A, PORTO, PORTUGAL; 2. SCHOOL OF HEALTH, POLYTECHNIC INSTITUTE OF PORTO, PORTO, PORTUGAL.

Stem cells, characterised by their remarkable regenerative potential and ability to differentiate into different cell types, hold immense promise in therapeutic applications. The umbilical cord is one source of stem cells which is easy, safe, and non-invasive for the mother and infant. BebéVida, a cryopreservation laboratory in Porto, served as the pivotal setting for this study. Beyond the therapeutic potential of stem cells, this study focuses on the intricate relationship between blood groups and the immune system. Variations in immune cell numbers across different blood groups suggest a potential influence of ABO antigens on early immune cell composition. The human immune system undergoes a remarkable journey from embryonic stages to infancy, marked by a gradual transition from reliance on innate immunity, which is genetically encoded, to the development of adaptive responses. ABO blood group antigens, determined by genetic inheritance, further shape immune characteristics, with antibodies passed from the mother providing temporary protection until the infant's immune system matures. This intricate interplay between genetic factors, maternal influence, and blood group genetics lays the foundation for lifelong immune health and disease susceptibility. As it has been demonstrated in different studies, there are potential links between ABO blood groups and cancer, cardiovascular, infectious (bacteria, viruses, and parasites), metabolic, and allergic diseases, and that is why this study was conducted, to understand the influence of blood groups on the umbilical cord blood immune cell profile. The parameters analysed were the nucleated cells, WBC, neutrophils, monocytes, lymphocytes, NRBC, and platelets. In fact, this study underscores the dual significance of umbilical cord stem cells in therapeutics and the intricate interplay between blood groups and immune system dynamics. By elucidating these relationships, we can advance personalized medicine approaches and improve our understanding of disease predisposition across diverse populations.

KEYWORDS: *umbilical cord blood, abo blood group, transfusion medicine*

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