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Cultured red blood cells for transfusion

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Abstract

Blood transfusion represents the first form of cell therapy to enter into clinical use and has played a major role in the development of advanced therapies for genetic form of anemia (that would be otherwise lethal) and for cancer and makes it feasible to perform the extensive surgical procedures developed by modern medicine. In developed countries the blood supply is adequate and sporadically even in excess. However, difficulties exist to finding blood for alloimmunized patients and for patients with rare blood phenotypes. In addition, the human population is progressively ageing. Changes in age affect the blood supply by both increasing demand and reducing donation. It is predicted that if the human population continues to age at the current paste, blood will become scarce by 2050 (Ali et al. Transfusion 2010; 50:584). These considerations establish the need to develop techniques for generation of cultured red blood cells (cRBCs) as transfusion products.

The first-in-man administration of cRBCs (Giarratana et al. 2011; 118:5071-9) has raised great excitement that cultured cRBCs may be used for transfusion in the near future. One of the most compelling issues related to production of *c*RBC is identification of stem cell sources suitable for their generation. This presentation will discuss the use of buffy coats generated as discarded bio-products during the preparation of platelets from blood of donors expressing rare blood group phenotypes as promising source of cRBCs for diagnostic and clinical purposes.

Biography

Anna Rita Migliaccio has completed her Ph.D at the age of 22 years from Naples University, Naples, Italy and has conducted her postdoctoral studies at the TNO, Rijswijk, The Netherlands and the University of Washington, Seattle, WA. Currently, she is Professor of Medicine, at the Tisch Cancer Institute, Mount Sinai School of Medicine, New York, NY 10029. She has published more than 135 papers in reputed journals and serves as editorial board member of prestigious hematology journals including Blood.