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Preliminary data of adipose stem cells and stem cells markers characterization from human lipoaspirate: A comparative study

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Numerous studies have provided preclinical data on the safety and efficacy of adipose derived stem cells (ADSCs), supporting the use of these cells in current and future clinical applications. This is the first study to our knowledge, which aims to compare the cell viability and the absolute number of mesenchymal stem cells and ADSCs from three different approaches of preparing adipose tissue for autologous transplantation. Adipose tissue was taken from the hip/thigh region of 8 female donors undergoing liposuction for cosmetic purposes. The mean age of patients is 35, (range 21–59 years) and their mean body mass index (BMI) is 26.5 (range 21.4–28.7 kg/m²). From every patient, there was sent three different fat samples: lipoaspirated fat decanted (A), lipoaspirated fat prepared by normal saline washing (B) and stromal enriched lipograft (C). Multi-parameter flow cytometry to determine the absolute number and viability of ADSCs was performed. The total samples (24) were processed within 5h of collection. The results obtained from the analysis of eight different donors of lipoaspirate indicate that the highest absolute number of viable adipose derived stem cells is found in the Stromal Enriched Lipograft (sample C). Their purity was confirmed by the high expression (> 95%) in the positive markers and low expression (< 2%) in the negative markers. Taken together, these data indicate that purified lipoaspirate-derived stem cells maintain their characteristic of staminality, suggesting that they could be applied for cell-based therapy to improve autologous lipoaspirate transplant.

Biography

Vasiliki E. Kalodimou MSc, Ph.D. is the Director of the Flow Cytometry-Research and Regenerative Medicine Department at IASO Maternity-Pediatric & Research Hospital in Athens, Greece. She has studied and worked with progenitor cells from placenta, umbilical cord, and adipose tissue in everyday practice along with their applications in regenerative medicine and flow cytometry, with publications in the field, including research fellowships. She has published 2 books about flow cytometry, the Greek edition of this book was published in 2010 and in 2013 the book was published from AABB Press USA. She is also an AABB assessor from 2011.

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