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Optimized method for isolation of regenerative stromal cells from human lipoaspirates

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Abstract

Background: One of the problems encountered in the stromal vascular fraction (SVF) cells therapy as a regenerative medicine is finding an effective and efficient method of adipose tissue processing. In this study, we try to improve the whole adipose processing method so it is not only generates high yield SVF, but also could saving cost and time. Methods: Each 30 ml of subcutaneous adipose from twelve patients is separated into three groups treatments as follows: Group A treated with trypsin-EDTA, Group B with recombinant enzyme, and Group C with a commercial kit. The number and viability of SVF cells in each methods is determined. The product of SVF is seeded in culture condition. The attached cells analysed with CFU-F testing, FACS assay, and differentiation capability assay are performed to confirm the stem cells properties. Results: The average of SVF cells number per 10 ml of adipose in Group A: 1.7×10^6 cells (96.58%), Group B: 5.1×10^7 cells (97.85%), and Group C: 1.9×10^7 cells (96.86%). The result of modified of method B produces up to 1.1×10^9 per 10 ml of adipose. Findings or Conclusion: We improved the whole adipose processing method from method previously described. We use non-animal derived recombinant enzyme, more cost and time saving proven compare to collagenase, with the higher yields than that obtained from collagenase, trypsin, or its both combination method.

Keywords

stromal vascular fraction, lipoaspirate, adipose derived stem cells, regenerative medicine

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References