

Obese and ex-obese adipose tissue-derived cells: From physiology to regenerative medicine

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Adipose tissue (AT) is now recognized as an endocrine organ with a central role in the physiopathology of obesity. The Stromal-Vascular Fraction (SVF) of subcutaneous AT comprises endothelial (mature endothelium and endothelial progenitors) and stromal (mesenchymal stem cells, preadipocytes and macrophages) cells subpopulations. The SVF is responsible for AT homeostasis and in particular the mesenchymal stem cells are defined as multipotent progenitors, yielding at least three types of cells. Although many studies have reported a function for macrophages, little is known about AT-SVF subpopulations. We aimed to investigate changes on the AT-SVF caused by obesity and weight loss. Multicolor flow cytometry analyses were done on SVF populations derived from AT of control (BMI=27.5±0.6), obese (BMI=48.2±5.4) and ex-obese (BMI=28.3±1.5) patients. AT from obese was sevenfold enriched in mesenchymal stem cells compared to controls. Frequency of pre-adipocytes was similar in obese and controls, but significantly enriched in ex-obese, supporting our previous study. Endothelial progenitor cells increased with obesity and their frequency was even higher after weight loss. Obese tissue had also an increase in resident macrophages, but their frequency in ex-obese was lower than in obese. Obesity induces specific changes in the frequency of AT-SVF that is not fully restored after bariatric surgery and weight loss. These evidences should be considered for medicine regenerative approaches using mesenchymal stem cells. Functional analyses are in course to understand how SVF cells from each patient condition respond to inflammatory stimulus.

Biography

Leandra Santos Baptista has completed her Ph.D at the age of 27 years from Federal University of Rio de Janeiro and postdoctoral studies from National Institute of Metrology, Quality and Technology. She is associate professor of Federal University of Rio de Janeiro since 2009, just one year of her PhD. Her research skills include primary human cell culture, flow cytometry and histology. She has published papers in reputed journals and still develops projects in education area.

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