

Propionic acid influence on human adipose tissue derived macrophages

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Abstract :

Introduction:

Obesity is an epidemic problem worldwide including Palestine. It is associated with chronic activation of low-grade inflammation, which is implicated in the pathogenesis of insulin resistance and type-2 diabetes. Adipose tissue (AT) is a primary site of obesity-induced inflammation. Stromal vascular cells (SVF, i.e. macrophages) is a main constituent cell type of adipose tissue that contributes to inflammation. Recently, we showed that propionic acid, a short-chain fatty acid produced by colonic fermentation, inhibited adipose tissue inflammation. Therefore, we aim to optimize, as a first step, the isolation and culturing of SVF cells in order to determine its role in mediating propionic acid effect in future studies.

Materials and methods:

To achieve our aim subcutaneous AT samples were obtained from 13 who underwent abdominal surgery. Adipose tissue was disintegrated via a protocol we optimized.

Results and discussion:

In this study we report a detailed description of steps to optimize the isolation of SVF cells through troubleshooting suggestions, highlighting the critical features and steps of the protocol. For example, we optimized the RBC lysis buffer and centrifugation speed and time. We prevented cross contamination between cell types employing mesh gauze and cell strainers and we selected the optimal tubes to separate SVF.

Conclusion:

We optimized a cost and time effective protocol to isolate SVF cells at our laboratory, and it can provide a source of SVF derived cells to enable future studies to unravel the role of SVF in mediating the inhibitory effect of propionic acid.