ABSTRACT

Diabetes, which is categorized into type 1 and type 2, is caused by deficiency in blood glucose regulation, which causes organ damage. While type 2 diabetes includes insulin resistance, type 1 diabetes results from inadequate insulin production. Even among teenagers, the prevalence of type 2 diabetes is growing globally and is mostly related to lifestyle factors. Anti-diabetic drugs attempt to improve insulin activity in response to this problem, but they may have negative side effects. Innovative in-vitro testing, which concentrates on cell-based systems to understand physiological processes and enhance therapeutic approaches, provide a more useful and moral alternative to drug development. This study investigated how Endothelial Colony-Forming Cells (ECFCs) changed morphologically and by numbers in response to two different treatments: high glucose (10 mM), inflammatory stimulator IL1B (10 ng/ml), and their respective vehicle controls. ECFCs treated with high glucose and IL1B showed cell hypertrophy and morphological changes in comparison to the vehicle and treatment, indicating significant structural alterations in the cell cytoskeleton under these circumstances. The treated samples also included fewer cells than their vehicle-treated counterparts, which suggests an impact on cell viability, adhesion and/or proliferation.

***Keywords**: Diabetes, Blood glucose deficiency, Diabetes model development, ECFCs*