Category: Miscellaneous

**Plant extract AE11 acts as a potent modulator of adipocyte development and function**

Anuj Kumar Borah and Sougata Saha

Tezpur University, Assam-784028, INDIA

Presenting author: kr.anuj.borah@gmail.com

**Abstract**

Use of herbal formulation to modulate adipocyte development and function has been argued as a potent strategy to tackle alarmingly increasing problem of obesity and associated disease like type 2 diabetes and other cardiovascular problems. However, till date no single formulation exists with good efficacy and little side effects. In this study we are investigating the effect of AE11 (6% v/v, nontoxic to 3T3-L1), a plant extract prepared using cold maceration of shade dried leaves of a common flowering plant of Lakhimpur district of Assam, on 3T3-L1 pre-adipocyte differentiation and function. AE11 very efficiently decreased lipid accumulation in differentiating 3T3-L1 cells. To understand the mechanism of such inhibition, we performed gene expression analysis using semi-quantitative PCR for adipogenic master regulator PPARγ1 and PPARγ2. A marked reduction in expression of both of the genes were observed in AE11 treated differentiating 3T3-L1 cells. Western blot analysis confirmed reduction of the two factors at protein level as well. Not surprisingly PPARγ downstream GLUT4, PLN1, FABP4, FAS and LPL mRNA content was also reduced in treated groups. Interestingly mRNA content of the transcription factor GATA2, which is a negative regulator of PPARγ expression and is normally downregulated during adipogenesis, found to be very high in the AE11 treated cells. This raised a possibility of GATA2 mediated downregulation of PPARγ in AE11 treated groups. GATA3 mRNA content was however not different in treated and untreated groups. mRNA of CCAAT enhancer binding protein α (CEBPα) which is a positive regulator of PPARγ expression was decreased by AE11 exposure to 3T3-L1 cells during differentiation. AE11 targeted the expression of another positive regulator of PPARγ expression, SREBP1c. SREBP1c mRNA content was decreased upon AE11 treatment in differentiating 3T3-L1 cells. These preliminary results suggest AE11 is an effective modulator of adipocyte development and function by targeting positive and negative regulators of PPARγ gene expression. The authors thank Department of Biotechnology (DBT) for providing fellowship and funds to carry out the work.

**Citation:** Borah, A.K. and Saha, S. Plant extract AE11 acts as a potent modulator of adipocyte development and function [Abstract]. In: Abstracts of the NGBT conference; Oct 02-04, 2017; Bhubaneswar, Odisha, India: Can J biotech, Volume 1, Special Issue, Page 144.

https://doi.org/10.24870/cjb.2017-a130