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Cloning and characterization of adipogenin and its overexpression enhances fat accumulation of bovine myosatellite cells

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Abstract

Adipogenin (ADIG) is an adipocyte-specific membrane protein highly expressed in adipose tissues and is increased during the adipocyte differentiation. However, the roles and mechanisms of ADIG on fat accumulation and adipocyte differentiation in ex vivo still largely unknown. In this study, we isolated bovine myosatellite cells based on adhesion characteristics to investigate whether ADIG overexpression could promote trans-differentiation and increase fat accumulation in myosatellite cells. Immunofluorescence labeling was then used for the phenotypic characteristics of myosatellite. Our results showed that, after induction of differentiation, adenovirus mediated ADIG overexpression could upregulate expression level of PPARγ, and Oil Red O staining showed larger lipid drops compared to control groups. In consistent, key components of Hh signaling pathway were down regulated when infected with ADIG adenovirus, even though treated with inhibitor of Hh signaling pathway together could not induce further decrease. In addition, bioinformatics analysis of ADIG was also performed for its structure and function.

Keywords

bioinformatics analysis; membrane protein; trans-differentiation; Hh signaling pathway