

## Up-regulated miR-145 Expression Inhibits Porcine Preadipocytes Differentiation by Targeting IRS1

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### Abstract :

Generally, most miRNAs that were up-regulated during differentiation promoted adipogenesis, but our research indicated that up-regulation of miR-145 in porcine preadipocytes did not promote but inhibit adipogenesis. In this study, miR-145 was significantly up-regulated during porcine dedifferentiated fat (DFAT) cells differentiation. In miR-145 overexpressed DFAT cells, adipogenesis was inhibited and triglycerides accumulation was decreased after hormone stimulation ( $P < 0.05$ ). Furthermore, up-regulation of miR-145 expression repressed induction of mRNA levels of adipogenic markers, such as *CCAAT/enhancer-binding protein 1 (C/EBP1)*, and *peroxisome proliferator-activated receptor 2 (PPAR2)*. These effects caused by miR-145 overexpression were mediated by *Insulin receptor substrate 1 (IRS1)* as a mechanism. These data suggested that induced miR-145 expression during differentiation could inhibit adipogenesis by targeting IRS1, and miR-145 may be novel agent for adipose tissue engineering.

### Key Word :

miR-145, IRS1, inhibit, dedifferentiated fat cells, adipogenesis.

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