



# Construction of suppressor of cytokine signaling 2 (*SOCS2*) adenoviral overexpression vector and its impact on growth hormone-induced lipolysis in swine primary adipocytes

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**ABSTRACT.** We investigated the effect of overexpression suppressor of cytokine signaling 2 (*SOCS2*) on lipolysis in swine primary adipocytes (pAd) induced by growth hormone (GH). We constructed pAd-*SOCS2* adenoviral overexpression vectors to infect HEK293 cells for virus packaging and propagation. Cultured swine primary adipocytes were infected with virus particles; after 48 h the infected adipocytes were treated with 500 ng GH/mL in the growth medium. Lipometabolism-related gene expressions were detected at 0, 0.25, 0.5, 1, 2, and 4 h, by measuring mRNA and protein levels. The pAd-*SOCS2* overexpression vector was successfully constructed and the concentration of titrated virus was  $1.2 \times 10^9$  PFU/mL. We found that virus infection significantly increased *SOCS2* mRNA and protein levels in swine primary adipocytes. Overexpression of *SOCS2* significantly inhibited the increase in fatty acid synthase, adipose triglyceride lipase mRNA, and protein expression at 0.5 h. However, after 0.5 h, this inhibition was not significant. We concluded that overexpression of *SOCS2* inhibited the

increase in lipolysis induced by GH in swine primary adipocytes; this could provide a basis for studies of lipometabolism.

**Key words:** Swine; *SOCS2*; Overexpression adenoviral vector; Primary adipocytes; Lipolysis