



Sterol regulatory element binding protein-1c expression and action in rat muscles: insulin-like effects on the control of glycolytic and lipogenic enzymes and UCP3 gene expression.

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Auteur	Guillet-Deniau, Isabelle [1], Mieulet, Virginie [2], Le Lay, Soazig [3], Achouri, Younes [4], Carré, Denis [5], Girard, Jean [6], Foufelle, Fabienne [7], Ferré, Pascal [8]
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Résumé en anglais	<p>Sterol regulatory element binding protein-1c (SREBP-1c) is a transcription factor that mediates insulin effects on hepatic gene expression. It is itself transcriptionally stimulated by insulin in hepatocytes. Here we show that SREBP-1c mRNA is expressed in adult rat skeletal muscles and that this expression is decreased by diabetes. The regulation of SREBP-1c expression was then assessed in cultures of adult muscle satellite cells. These cells form spontaneously contracting multinucleated myotubes within 7 days of culture. SREBP-1c mRNA is expressed in contracting myotubes. A 4-h treatment with 100 nmol/l insulin increases SREBP-1c expression and nuclear abundance by two- to threefold in myotubes. In cultured myotubes, insulin increases the expression of glycolytic and lipogenic enzyme genes and inhibits the 9-cis retinoic acid-induced UCP3 expression. These effects of insulin are mimicked by adenovirus-mediated expression of a transcriptionally active form of SREBP-1c. We conclude that in skeletal muscles, SREBP-1c expression is sensitive to insulin and can transduce the positive and negative actions of the hormone on specific genes and thus has a pivotal role in long-term muscle insulin sensitivity.</p>

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