



## Regulation of ABCA1 expression and cholesterol efflux during adipose differentiation of 3T3-L1 cells.

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Auteur	Le Lay, Soazig [1], Robichon, Celine [2], Le Liepvre, Xavier [3], Dagher, Georges [4], Ferré, Pascal [5], Dugail, Isabelle [6]
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Résumé en anglais	Adipose cells specialized in energy storage, contain large intracellular triglyceride-rich lipid droplets, are enriched with free cholesterol, and express sterol-regulated transcription factors such as liver X receptor (LXR). The recent identification of the LXR-dependent ATP binding cassette transporter A1 (ABCA1) pathway for cholesterol release from peripheral cells has led us to address the question of the expression and function of ABCA1 in adipocytes. In 3T3-L1 adipose cells, we observed a strong induction of ABCA1 mRNA during adipose differentiation, but only limited variations in ABCA1 protein. Lipid efflux onto apolipoprotein A-I (apoA-I), which depends on ABCA1, was comparable in adipocytes and preadipocytes, demonstrating a differential regulation of ABCA1 mRNA and cholesterol efflux. We also found that total cell cholesterol remained stable during differentiation of 3T3-L1 cells, but membrane cholesterol was lower in adipocytes than in preadipocytes, suggesting redistribution of cholesterol to the lipid droplet. Finally, we show that under standard lipolytic stimulation, 3T3-L1 adipocytes do not release cholesterol onto apoA-I, a process that required long exposures to lipolytic agents (24 h). In conclusion, despite large induction of ABCA1 mRNA during differentiation, cholesterol efflux through the ABCA1 pathway remains limited in adipocytes and requires prolonged lipolysis. This is consistent with the view of the adipocyte behaving as a cholesterol sink, with plasma cholesterol-buffering properties.

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## Liens

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