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mRNA abundance and expression of SLC27A, ACC, SCD, FADS, LPIN, INSIG, and PPARGC1 gene isoforms in mouse mammary glands during the lactation cycle

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ABSTRACT. The functions of distinct isoforms of solute carrier family 27 transporters (SLC27A1-6), acetyl-CoA carboxylase (ACACA, ACACB), stearoyl-CoA desaturase (SCD1-4), fatty acid desaturase (FADS1-3), LPIN (LPIN1-3), insulin-induced gene (INSIG1, 2), and peroxisome proliferator-activated receptor gamma coactivator1 (PPARGC1A, B) were studied in the mouse mammary gland from pregnancy to lactation. The relative mRNA abundance and percent change in real-time PCR were determined. mRNA expression of SLC27A3 and SLC27A4 was 37- and 1.4-fold more upregulated at 12 days of lactation, respectively ($P < 0.01$). Transcripts of SCD isoforms were the most abundant, accounting for 59% of all genes measured, and PPARGC1 isoforms were the least (0.06% of all genes measured). The mRNA abundance from ACC, FADS and LPIN accounted for 29, 9 and 2.6%, respectively. INSIG1 mRNA expression was 32-fold more upregulated ($P < 0.05$), while PPARGC1B was 0.18-fold downregulated at 18 days of lactation ($P < 0.01$). We concluded that

mRNA abundance and expression of these isoforms are affected by the stage of lactation.

Key words: Isoform; Lactation; Lipogenic gene;
Mouse mammary gland; Quantitative real-time PCR

