

Conference Paper

Blunted Expression of PPARα in Mice with FABP-4 and -5 Deficiency under Acute Cold Exposure

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Abstract

Brown Adipose Tissue (BAT) is a nonshivering thermogenesis organ during cold exposure. Peroxisomal proliferator activated receptor alpha (PPARα) is the member of the nuclear hormone receptor superfamily and primarily expressed in BAT and liver. PPARα is coordinated with uncoupling protein 1 (UCP1) to regulate fatty acid metabolism in BAT. Fatty acid binding protein (FABP)-4 and -5 play role in adaptive response under fasting and cold exposure. The purpose of this study was to investigate the expression of PPARα in mice with FABP4/5 deficiency (DKO). Wildtype (WT) and DKO mice were exposed to cold for 2 hours under fed or 20 hours-fasted conditions. BAT was collected and further mRNA level of PPARα was examined using quantitative real-time PCR. As the result, PPARα gene expression in WT mice were increased 50% and 100% in fed and fasted condition respectively after cold exposure. There was no alteration in PPARα expression in BAT of DKO mice. As conclusion, The functional FABP-4 and -5 are necessary to modulate PPARα gene expression in Brown Adipose Tissue under acute cold exposure.

Keywords: Acute cold exposure; FABP4; FABP5; Fasting PPARα.

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