III-49 Impacts of prenatal FGF21 on the thermogenic gene expression in adipose tissues at neonate and adult stages

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Fibroblast growth factor 21 (FGF21) is mainly produced by the liver and its expression is transcriptionally regulated by PPAR-α. FGF21 is postulated to be a thermogenic hormone, since it has been demonstrated to be involved in the browning of white adipose tissue (WAT) and to activate thermogenic gene expression, with PGC-1α, in WAT and brown adipose tissue (BAT). The aim of this study is to investigate whether the intrauterine exposure to high levels of FGF21, by giving clofibrate (a PPAR-α agonist) to pregnant mothers, influences the thermogenic gene expression in BAT and WAT of offspring at neonate and adult stages. Pregnant C57BL/6J mice were divided into two groups to receive a control or a CF diet (0.5% clofibrate) for the whole gestational period. After delivery, all pups will be lactated by control dams, weaned on chow diet, and exposed to a high fat diet at 8-12 wk of age. The high fat diet is used to stimulate the browning of WAT. Some pregnant mothers will be killed at pregnant d18 to check the FGF21 levels in plasma and tissues. Offspring will be killed at embryonic d18, postnatal d7, 14, and 21, and at 12 wk of age to check the FGF21 levels in liver and plasma, and thermogenic gene (including Fgf21, Ucp-1, Pgc-1α, Prdm-16, Tmem26, Tbx1) expression in WAT and BAT. This study is helpful in finding a stralegy to reduce obesity by increasing thermogenesis.