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HIGH EXPRESSION LEVEL OF PPARγ IN CD24 KNOCKOUT MICE AND GENDER SPECIFIC METABOLIC CHANGES: A MODEL OF INSULIN-SENSITIVE OBESITY

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Background: The *(HSA)/CD24* gene encodes a heavily-glycosylated cell surface protein and is expressed primarily in precursor cells. Different polymorphisms of the gene may be associated with autoimmune diseases and cancer. Peroxisome proliferator-activated receptor gamma (PPARγ) appears to play a role in obesity. **Aim:** To assess gender-dependent changes in body weight, insulin sensitivity, glucose uptake, and PPARγ expression in HSA knockout mice and to validate the results in a healthy population (n=318). **Methods:** Wild-type (WT) $HSA^{+/+}$ and CD24 KO $HSA^{-/-}$ mice were compared from birth for nearly a year. An insulin challenge and a glucose challenge were used to assess insulin sensitivity and glucose uptake, respectively. PCR was used to assess PPARγ expression in isolated kidney adipose tissues. In a cross-sectional study the genetic polymorphism $P170^{TT}$ was assessed by PCR in addition to anthropometric measurements and blood tests for glucose and lipid profile. **Results:** Water and food consumption were similar for both groups. Mean body weight of the CD24 KO mice was greater than in WT, particularly in males which also displayed greater (10-20%) insulin sensitivity and glucose uptake. PPARγ expression was higher in $HSA^{-/-}$ males than in WT. In humans The $P170^{TT}$ SNP was associated only with higher blood levels of total cholesterol and LDL-C. **Conclusions:** Our results imply that HSA regulates the expression of PPARγ and may have a role in insulin sensitivity, obesity. CD24 may also affect dyslipidemia, possibly through regulation of PPARγ. $HSA^{-/-}$ male mice may serve as a model of early obesity and insulin sensitivity.