Mice Strain Differences in Effects of Fetal Exposure to Diesel Exhaust Gas on Male Gonadal Differentiation

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We have shown that in ICR pregnant mice exposed to diesel exhaust (DE), mRNA expression of müllerian inhibiting substance (MIS) and a steroid hormone transcription factor (Ad4BP/SF-1), which are essential in male gonadal differentiation, decreases in a DE concentration-dependent manner. To further investigate whether these effects differ among strains, we conducted the present study in 3 different strains: ICR mice, ddY mice, and C57BL/6J mice. The response to DE exposure differed among the 3 strains. In C57BL/6J male fetuses, only MIS mRNA expression significantly decreased, and in ddY male fetuses, there was no change in either MIS or Ad4BP/SF-1 mRNA expression. Although there was no definite correlation between mouse strain characteristics and differences in the effects of DE, our findings suggest strain-related variations in DE sensitivity with respect to gene expression regulating male gonadal differentiation.

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