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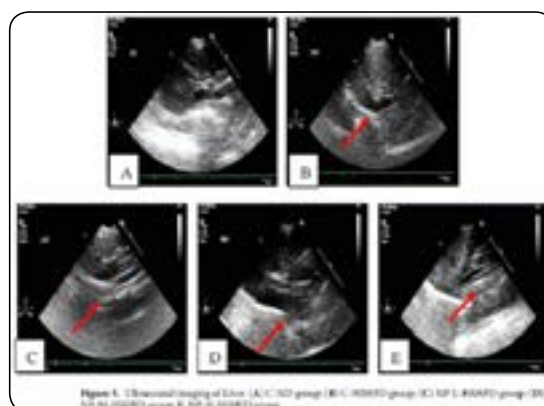
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Nonylphenol induces metabolic syndrome in high sucrose-high fat diet-treated rats

Yu Jie and Xu Jie

Zunyi Medical University, P R China

Exposure to environmental endocrine disruptors (EEDs) contributes to the pathogenesis of many metabolic disorders. Here, we have analyzed the effect of the EED-nonylphenol (NP) in the promotion of non-alcoholic fatty liver disease (NAFLD) in rats fed high sucrose-high fat diet (HSHFD). Fifty Sprague-Dawley rats were divided into five groups: controls fed a normal diet (C-ND); HSHFD-fed controls (C-HSHFD); and rats fed a HSHFD combined with NP at doses of 0.02 µg/kg/day (NP-L-HSHFD), 0.2 µg/kg/day (NP-M-HSHFD), and 2 µg/kg/day (NP-H-HSHFD). Subchronic exposure to NP coupled with HSHFD increased daily water and food intake ($p < 0.05$), hepatic echogenicity and oblique liver diameter ($p < 0.05$), and plasma levels of alanine aminotransferase, aspartate aminotransferase, total cholesterol, triglycerides, and low density lipoprotein cholesterol ($p < 0.05$). Combined exposure to NP and HSHFD induced macrovesicular steatosis with dilation and congestion of the central vein, liver inflammatory cell infiltration, and expression of genes regulating lipid metabolism, SREBP-1C, FAS, and Ucp2. These results demonstrate that NP aggravates NAFLD in HSHFD-treated rats by up-regulating lipogenic genes, and that HSHFD increases the toxic effects of NP. Thus subchronic NP exposure may lead to NAFLD, especially when combined with a high-sucrose/high-fat diet.



Recent Publications

1. Yu Jie et al. (2018) Protective effects of Chinese Fenggang zinc selenium tea on metabolic syndrome in high-sucrose-high-fat diet-induced obese rats. *Scientific Reports*. 8(1):3528.
2. Jie Yu et al. (2018) The adverse effects of chronic low-dose exposure to nonylphenol on type 2 diabetes mellitus in high sucrose-high fat diet-treated rats. *Islets*. 10(1):1-9.
3. Jie Yu et al. (2017) Adverse effects of chronic exposure to nonylphenol on non-alcoholic fatty liver disease in male rats. *PloS One*. 12(7): e0180218.
4. Yu Jie et al. (2017) Pollution by Nonylphenol in river, tap water, and aquatic in an acid rain-plagued city in southwest China. *International Journal of Environmental Health Research*. 27(3):179-190.
5. Jing Yang et al. (2017) The adverse effects of perinatal exposure to nonylphenol on carbohydrate metabolism in male offspring rats. *International Journal of Environmental Health Research*. 27(5):368-376.

Biography

Yu Jie has his expertise in Environmental Toxicology. His most recent researches focus on the impact of environmental endocrine disruptors on endocrine metabolism disorder, neurotic depression and its mechanisms.

xujie360@hotmail.com