

A mechanism of male germ cell apoptosis induced by bisphenol-a and nonylphenol involving ADAM17 and p38 MAPK activation

Urriola-Muñoz, Paulina

Lagos-Cabré, Raúl

Moreno, Ricardo D.

© 2014 Urriola-Muñoz et al. Germ cell apoptosis regulation is pivotal in order to maintain proper daily sperm production. Several reports have shown that endocrine disruptors such as Bisphenol-A (BPA) and Nonylphenol (NP) induce germ cell apoptosis along with a decrease in sperm production. Given their ubiquitous distribution in plastic products used by humans it is important to clarify their mechanism of action. TACE/ADAM17 is a widely distributed extracellular metalloprotease and participates in the physiological apoptosis of germ cells during spermatogenesis. The aims of this work were: 1) to determine whether BPA and NP induce ADAM17 activation; and 2) to study whether ADAM17 and/or ADAM10 are involved in germ cell apoptosis induced by BPA and NP in the pubertal rat testis. A single dose of BPA or NP (50 mg/kg) induces germ cell apoptosis in 21-day-old male rats, which was prevented by a pharmacological inhibitor of ADAM17, but not by an inhibitor of ADAM10. In vitro, we showed that