THE HAMNER INSTITUTES FOR HEALTH SCIENCES

Science Question 5 - Human relevance of non-androgen related male endpoints

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Of Mice and Men (and Rats): Phthalate-Induced Fetal Testis Endocrine Disruption Is Species-Dependent

TABLE 1
Reproductive Phenotype of Mammalian Species After Fetal Phthalate Exposure

Species	Fetal testis testosterone	Fetal testis steroidogenic genes	Fetal testis *Insl3*	Seminiferous cord histopathology[a]	MNG[b]	AGD[c]	Hypospadias	Cryptorchidism
Rat	↓	↓	↓	↑	↑	↓	↑	↑
Mouse[d]	↔ or ↑	↑	↔	↑	↑	↔[e]	↑[f]	?
Rabbit	?	?	?	?	?	?	↑[g]	↑[g]
Marmoset	?	?	?	?	?	?	↔	↔
Human[h]	?	?	?	?	?	↓	↑	↔ or ↑
Human[i]	↔	↔	↔	↔	↑	NA	NA	NA

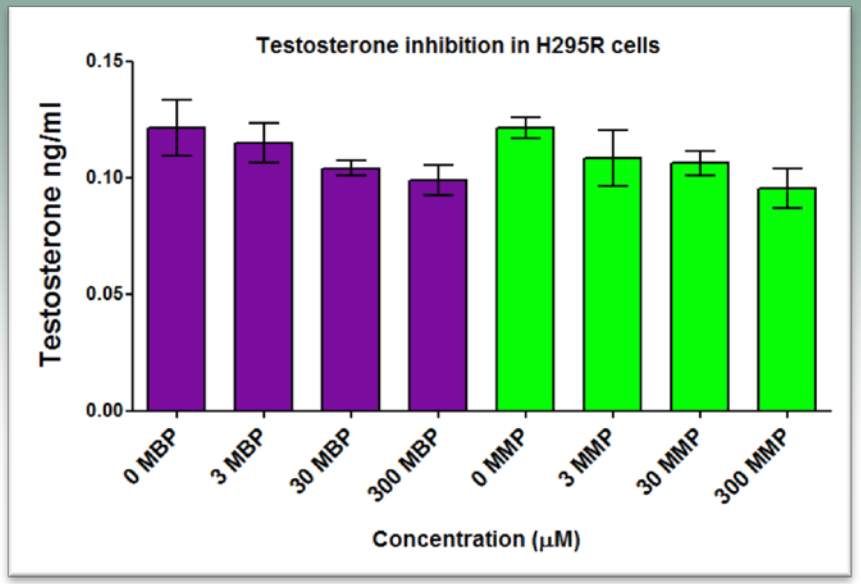
Note. ↓, decreased; ↑, increased; ↔, no change; ?, no data available; NA, not applicable.

Human fetal testis xenografts - Johnson et al. Toxicol. Sci. (2012) 129 (2): 235

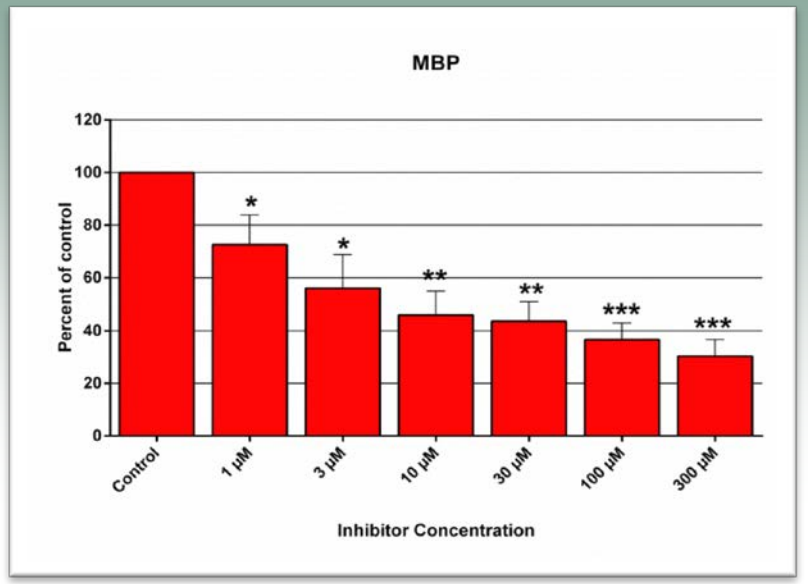
Heger et al. Environ Health Perspect. 2012;120(8):1137-43.

Spade et al. Toxicol Sci. 2014;138(1):148-60.

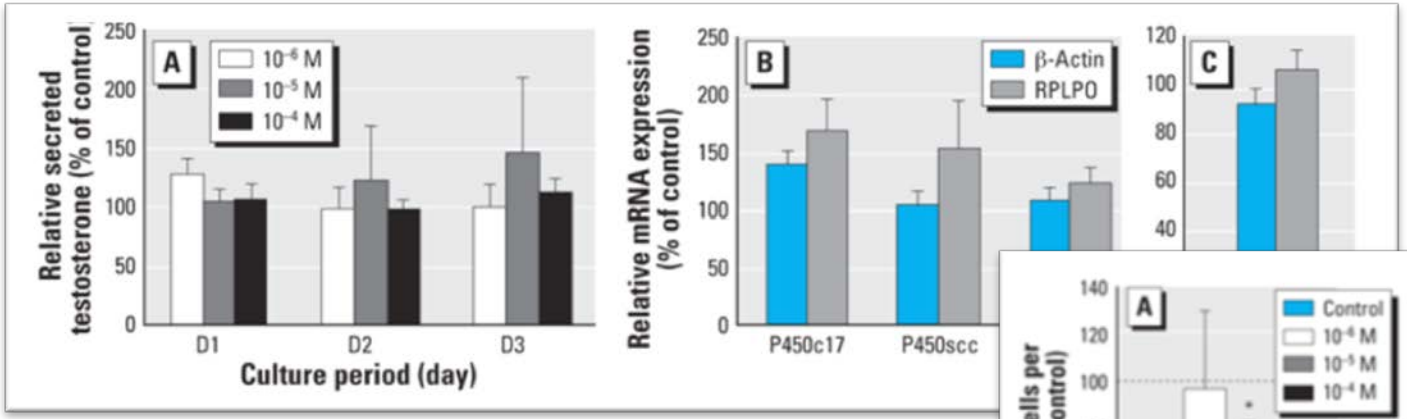
Mitchell et al. J Clin Endocrinol Metab. 2012;97(3):E341-8.



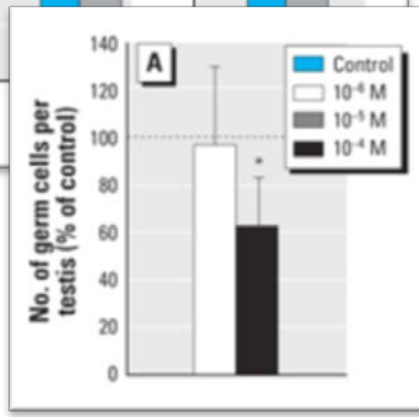
Human cell line (unpublished)

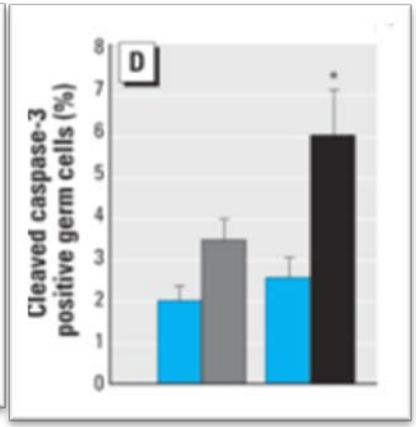


Rat cell line (R2C)
Balbuena et al. Toxicol In Vitro. 2013 27(6):1711



Human fetal testis explants –
Lambrot et al. Environ Health Perspect. 2009 Jan;117(1):32





Regardless of assay method –

Testosterone reduction is rat specific

Germ cell effects may be present in human