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BPA Study Report Card

The criteria identified in this Report Card have been established by the National Institute for Environmental Health Sciences (NIEHS) for use in evaluating research studies funded by the agency. The NIEHS criteria were developed in 2009 to provide the best parameters for assessing human health effects of BPA.

Study Meets Criteria	Study Criteria Unknown or not applicable	Study fails criteria

Study: Estrogenic Exposure Alters the Spermatogonial Stem Cells in the Developing Testis, Permanently Reducing Crossover Levels in the Adult

Authors: Lisa A. Vrooman, Jon M. Oatley, Jodi E. Griswold, Terry J. Hassold, Patricia A. Hunt

Journal: PLOS Genetics; January 2015

CRITERIA	SCORE	COMMENTS
Diet, must not interfere with the sensitivity of the model to BPA		No mention of estrogenicity testing of the chow
Species and strain of animals, (must be sensitive to estrogenic chemicals at low doses)		CD-1 mice have been shown to be one of the most sensitive species to estrogen compounds
Sufficient sample size		For 1 year data, only 4 data points reported for highest BPA exposure levels
Internal dose of BPA (total and free BPA should be measured in blood and if possible also in urine throughout the study),		No mention of blood measurements
Dose responses (single dose experiments are not acceptable),		Two BPA doses used with no consistent dose response
Phenotype (endpoint must be an actual phenotype, disease/dysfunction not just toxicity)		Effects seen on 1 strain of mouse, effects not seen in second (inconsistent results)
Litter must be used as statistical unit for developmental exposures		
Route of exposure should be oral or justified to provide similar blood levels as oral route		Oral exposure. 10 times human infant exposure
Males and females should be used when feasible		NA – only males used for sperm study
Molecular targets and mechanism should be assessed when possible including gene expression, receptor binding and epigenetic studies. These effects should be linked to the exposure and the disease/dysfunction endpoints.		

Note: Although exposure levels were not orders of magnitudes above human exposure 20ug/kg BW/day in study vs 2.4ug/kg BW/day for infants (0.19 ug/kg BW/day for adults), it is known that rodents have a delayed ability to metabolize BPA versus human. Therefore exposure levels of non-metabolized BPA (free-BPA) in this study compared to actual human exposure is dramatically higher. Additionally, the minimal effects seen were only observed in one of the two mice strains used in the experiment. Effects seen in BPA studies, although statistically relevant for each post-partum time, was significantly smaller than placebo deviation from test to test.

In this study, stem cell experiments were only performed with ethinyl estradiol (not BPA).