

LETTER TO THE EDITOR

Modeling Neonatal Thimerosal Exposure in Mice

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Dear Editor,

Dórea and Correa (2008) have raised valid points concerning evaluation of the toxicological risk from exposure to thimerosal in vaccines—specifically, that thimerosal is still in wide use as a vaccine preservative in many parts of the world, with exposure levels and age of exposure differing widely due to regional vaccination policies, schedules, and formulations. They raise particular concern over the use of thimerosal-preserved vaccines in premature and low-birth weight infants, where major organ systems, including the blood-brain barrier are immature and may alter the toxicokinetics of mercury elimination. We agree that these are valid concerns, and that much more research needs to be carried out that explores such factors when evaluating toxicological risk of mercury or other environmental toxicants. Dorea and Correa also suggest that the results and conclusions from our recent study in autoimmune susceptible SJL/6J mice (Berman *et al.*, 2008), while appropriate for vaccination schedules in the United States, do not encompass the range of vaccination schedules with thimerosal-preserved vaccines used worldwide in newborns and premature infants. Our experiments in mice were designed to pattern possible ethylmercury exposure through vaccination with thimerosal-preserved vaccines in the United States prior to 2001. Our study did not attempt to incorporate the various vaccination schedules and vaccination policies that

exist in other countries. However, the thimerosal dosages used in our study were based on vaccination of low-birth weight infants (10th percentile for males), and we also examined a thimerosal level that was 10 times higher on a microgram per kilogram basis than the maximum expected exposure level in the United States. Our experimental design would therefore be expected to extend the generality of our findings accordingly. Nevertheless, the issues raised by Dorea and Correa also highlight the difficulties in evaluating susceptibility to any environmental agent in the premature infant, given that there are innumerable confounding variables that can arise with exposure in a neonatal population. In conclusion, we agree that there are limitations to the conclusions that can be drawn from our study or any single toxicological study and that much more needs to be done to understand how differing patterns of vaccinations throughout the world may influence possible toxic effects of thimerosal, particularly when administered to infants.

REFERENCE

- Berman, R. F., Pessah, I. N., Mouton, P. R., Mav, D., and Harry, J. (2008). Low-level neonatal thimerosal exposure: Further evaluation of altered neurotoxic potential in SJL mice. *Toxicol. Sci.* **101**, 294–309.