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Exposure to a glyphosate-based herbicide formulation, but not glyphosate alone, has only minor effects on adult rat testis

Running Title: Low dose glyphosate exposure has little effect on adult rat testis.

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Highlights

- Exposure to pure glyphosate at 50xADI does not affect testis androgen function in male rats
- Glyphosate-based herbicide formulation has limited effects on adult rat testis, but the effect is likely not driven by glyphosate itself

ABSTRACT

Glyphosate has been suggested to be an endocrine disrupting chemical capable of disrupting male reproduction. There are conflicting data, however, with studies reporting on effects from exposure to either glyphosate alone or to herbicide formulations, making comparisons difficult. We assessed rat testis histopathology and androgen function following two weeks exposure to either glyphosate at 2.5 and 25 mg/kg bw/day (5x and 50x Acceptable Daily Intake, ADI, respectively), or equivalent high dose of glyphosate in a herbicide formulation; Glyfonova. We observed no significant effects on testes or testosterone synthesis in rats exposed to glyphosate. Limited effects were observed in rats exposed to Glyfonova, with a small upregulation of the steroidogenic genes *Cyp11a1* and *Cyp17a1*. We conclude that glyphosate alone has no effects on adult rat testis at exposure levels up to 25 mg/kg bw/day. Glyfonova induced only minor effects on steroidogenic gene expression, likely caused by additives other than glyphosate.

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