

Prenatal Glyphosate Exposure and Oxidative Stress in a Midwestern Prospective Birth Cohort

Julia Arwari

Emory University, Rollins School of Public Health

Abstract/Intro/Motivation

Glyphosate has been widely detected in the U.S. population, including pregnant women, yet evidence on potential biological effects during pregnancy remains limited.

This study evaluated whether prenatal glyphosate exposure is associated with urinary oxidative stress biomarkers measured in early pregnancy among participants in a prospective birth cohort in central Illinois.

Methods/Approach

Secondary analysis of maternal urinary glyphosate and oxidative stress biomarker data collected at ~13 weeks gestation.

Urinary biomarkers were log-transformed to address right skewness in outcome distributions.

Analyses included descriptive statistics, unadjusted linear regression, covariate screening, and generalized additive models (GAMs) to assess potential non-linearity.

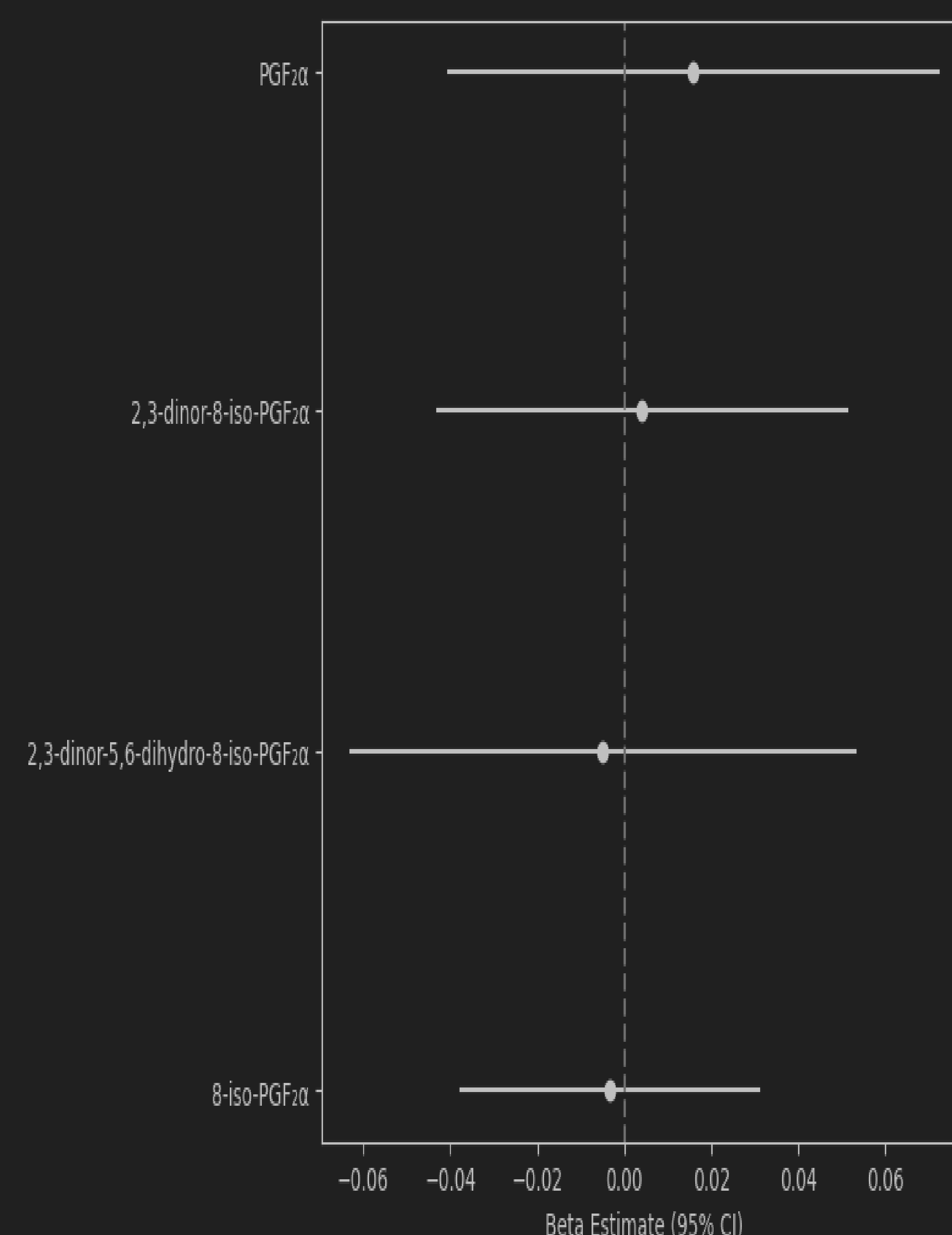
Results

Unadjusted linear regression models showed no statistically significant associations between glyphosate concentrations and any oxidative stress biomarkers.

No demographic or lifestyle variables met criteria for inclusion as covariates.

Generalized additive model analyses did not reveal evidence of non-linear exposure–response relationships, supporting null findings.

Unadjusted Associations Between Glyphosate and Oxidative Stress Biomarkers



Conclusions/Future Directions

In this prospective birth cohort, prenatal glyphosate exposure was not associated with urinary oxidative stress biomarkers measured in early pregnancy.

Null findings suggest that, at exposure levels observed in this population, glyphosate may not substantially contribute to maternal oxidative stress during the first trimester.

These results help refine understanding of potential biological pathways linking glyphosate exposure to maternal health outcomes and subsequent developmental outcomes.

Future research should incorporate repeated exposure measurements across pregnancy, evaluate mixture effects with other agrichemicals, and explore alternative mechanisms beyond oxidative stress.

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