

Maternal fructose intake impacts female and male fetuses differently

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A recent study accepted for publication in *Endocrinology*, a publication of The Endocrine Society, reports for the first time that maternal fructose intake during pregnancy results in sex-specific changes in fetal and neonatal endocrinology.

Fructose is a simple sugar found naturally in honey, fruit and some vegetables. Diets high in dietary fructose, particularly due to calorically sweetened beverages, are now increasingly common and have been shown to be detrimental to the regulation of [energy intake](#) and body adiposity. With the increasing prevalence of maternal obesity and its association with [gestational diabetes](#), there has been growing interest in maternal nutrition on the risk of childhood and adult disease in the offspring.

"There has been a marked increase in the consumption of fructose-sweetened beverages and foods, particularly among women of reproductive age," said Mark Vickers PhD, of the University of Auckland in New Zealand and lead author of the study." This is the first time that it has been suggested that female and male fetuses react differently to maternal fructose consumption, and that these sex-specific changes may be associated in changes in placental development."

In this study, researchers examined female Wistar rats that were time-mated and allocated to receive either water or a fructose solution designed to provide 20 percent of caloric intake from fructose. Only female fetuses in the fructose-fed rats had higher leptin, fructose and

[blood glucose levels](#) than their control counterparts. Male and female offspring of fructose-fed rats both showed higher plasma fructose levels and were hypoinsulinemic. Researchers also found that the [placenta](#) of female fetuses in the fructose-fed rats were lighter than the female fetuses in the control group.

"Further studies are now critical to establish the long-term effects of maternal [fructose](#) intake on the health and well-being of offspring and whether this study's observed sex differences elicit different risk profiles for metabolic disease into the post-weaning period," said Deborah Sloboda, PhD, also of the University of Auckland and co-author of the study. Dr Vickers is currently conducting a follow-up study in rats.

More information: The article, "Maternal fructose intake during pregnancy and lactation alters placental growth and leads to sex-specific changes in fetal and neonatal endocrine function," appears in the April 2011 issue of *Endocrinology*.

Provided by The Endocrine Society

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