

Excessive vitamin intake in pregnant rats impacts food choices in offspring

March 19 2015

A research group at the Department of Nutritional Sciences at the University of Toronto, Faculty of Medicine has been using a rat model to see how maternal intake of above-requirement vitamins (A, D, E, and K) impact offspring's brain development and behaviour. Some of their findings were published today in the journal *Applied Physiology, Nutrition, and Metabolism*.

Much research on vitamins focuses on prevention of deficiencies and the toxicity of very high intakes. However, little has been done on the effect of intakes above requirements as may be common in current diets because of the mandatory fortification of [food](#) to prevent deficiencies, discretionary additions of nutrients to foods (such as cereals), and an increased use of health foods and [vitamin supplements](#). During pregnancy many women consume better quality diets, but are also likely to use [vitamin](#) supplements, which combined may exceed vitamin intake requirements.

Fat soluble vitamins have distinct roles in fetal growth and development and this study's objective was to determine the effects of a high fat soluble vitamin diet during pregnancy on body weight gain, food intake and preference for palatable solutions in male Wistar rat offspring. This results showed little effect on weight gain and food intake but did find that [brain development](#) and food preference were affected.

According to Dr. Harvey Anderson, principal investigator and a co-author of the study, the research showed that high-vitamin maternal diets

affected hedonic pathways regulating food preference in the offspring. For example, the preference for sweetness was decreased; meaning the pups drank less of a sugar solution if their mothers were on the high vitamin diets. Thus, it seems consumption of these vitamins above requirements needed for healthy brains may impact offspring's dietary food preferences and potentially other associated behaviours.

"While these data provide novel information on the fundamental role of fat soluble vitamins in brain development, the rat brain developmental stages are not the same as in the human," explains Dr. Anderson, a co-author of this research study. "Nevertheless, it is clear we know little about the effect of vitamins when taken above requirements on brain development."

The application to human mothers and their offspring remains to be determined.

The article "A gestational diet high in fat soluble vitamins alters expression of genes in 1 brain pathways and reduces sucrose preference, but not [food intake](#), in Wistar male rat offspring" by Sanchez-Hernandez et al. was published today in the journal *Applied Physiology, Nutrition, and Metabolism*.

More information: Diana Sanchez-Hernandez, Abraham N. Poon, Ruslan Kubant, Hwanki Kim, Pedro SP Huot, Clara E. Cho, Emanuela Pannia, Zdenka Pausova, and G. Harvey Anderson. A gestational diet high in fat soluble vitamins alters expression of genes in 1 brain pathways and reduces sucrose preference, but not food intake, in Wistar male rat offspring. *Applied Physiology, Nutrition, and Metabolism*, 2015, 40 dx.doi.org/10.1139/apnm-2014-0480

Provided by Canadian Science Publishing (NRC Research Press)

Citation: Excessive vitamin intake in pregnant rats impacts food choices in offspring (2015, March 19) retrieved 25 April 2024 from <https://medicalxpress.com/news/2015-03-excessive-vitamin-intake-pregnant-rats.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.