

Researcher: New toxicant safety standards are needed to protect the young

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(PhysOrg.com) -- In an invited, peer-reviewed journal article on how prenatal exposure to toxic substances are linked to a host of diseases in later life -- from atherosclerosis to cancer -- a Cornell toxicologist calls for changing how safety testing is done to better protect infants and children.

Safety testing for environmental chemicals and drugs is routinely conducted on adults, said Rodney R. Dietert, professor of immunotoxicology at the College of Veterinary Medicine, which is hardly relevant for young children or children in utero.

"The developing immune system is more sensitive to toxicants than that of the adult and in ways that cannot be readily predicted by adult safety testing," said Dietert, whose perspective piece on developmental immunotoxicology (DIT) is the cover story of the January issue (22:1) of the American Chemical Society's Chemical Research in Toxicology.

"Yet, many chronic diseases that have been increasing in incidence -- including childhood asthma and allergies, autism, childhood leukemia, type 1 diabetes, celiac disease, rheumatoid arthritis and lupus -- are associated with early life environmental exposures, and they all also have immune dysfunction in common."

Dietert, who has been studying for more than a decade how toxic substances affect the developing immune system, stresses the need to focus more attention on identifying environmental factors that can damage the immune system during prenatal, infant and juvenile development. Protecting the immature immune systems could not only extend quality of life during adulthood, but also reduce future health care needs.

"The maturing immune system is a vulnerable target for toxicants as it progresses through a series of novel prenatal and perinatal events that are critical for later-life host defense against a wide array of diseases," said Dietert. "When it is disrupted by exposure to chemicals, all too often the outcome takes the form of persistent immune dysfunction or misregulation. For this reason, the health risks of exposure to toxicants are significantly greater in early life."

Because DIT is linked to a majority of the most significant childhood chronic diseases, he added, "safety testing for DIT is a pivotal issue in the protection of children's health."

Provided by Cornell University

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