

Prenatal Exposure to Environmental Pollutants Determines Weight and Size at Birth

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- *A higher exposure to xenoestrogens -a type of environmental pollutants acting as hormones-*
- [University of Granada](#) researchers have found a correlation between estrogenic burden in women's placenta and a higher neonatal weight at birth.

[University of Granada](#) researchers have proven that infants born to women living in large cities are more likely to have higher weight at birth than those born to mothers living in rural areas. This is probably due to a higher exposure to xenoestrogens, a type of environmental pollutants that act like hormones. This is the first research study conducted in Spain establishing a correlation between estrogenic burden in pregnant women's placenta and a higher birth weight.

For the purpose of this study, the researchers examined two groups of pregnant women. The first group was composed of pregnant women living in Madrid, while the second consisted of women living in Granada. The researchers found that there were biological, demographic and socioeconomic differences between both groups of women, which determined the presence of xenoestrogens in the placenta due to exposure to environmental chemicals.

The first group of mothers was composed of women living in Madrid, having a medium-high educational level, and most of them (89%) working in the field of administration or education. By contrast, the mothers sampled in the second group lived in rural areas of the province of Granada, had a low educational level (53.4% had no education or only primary education), and a high percentage of them were exclusively devoted to household chores (38.3%).

All this factors determine environmental exposure.

The researchers examined the factors conditioning environmental exposure, and a correlation was found between anthropometric and sociodemographic factors, health status, lifestyle and working conditions, and the total estrogenic burden. University of Granada researchers found that the estrogenic effect of placental tissue extract is directly related with certain characteristics in parents, childbirth and newborn babies. Thus, the group with higher estrogenic effect of placental tissue extract in alpha fraction was that of older women with lower body mass index and living in Madrid. Additionally, this is the group which gave birth to higher weight infants. These results suggest that estrogenicity of xenostrogens directly affects embryo-fetal development.

This study was conducted by María Remedios Prada Marcos, at the [University of Granada](#) Radiology and Physical Medicine Department, and coordinated by professors Nicolás Olea Serrano; Mariana Fátima Fernández Cabrera and Julio J. Boza Puerta.

Combined Effect Biomarker

Remedios Prada affirms that most studies on exposure to environmental pollutants are focused on separately quantifying the presence of chemicals in human body. "However, at present, more than 100,000 synthesized chemicals have been identified in the human body, which interaction effects –that might be additive, synergistic or even antagonistic– are unpredictable. Therefore, concentrations considered insignificant by classical toxicological parameters might interact and have a significant cumulative effect. That is the reason why, in this study, we have approached environmental exposure by using a combined-effect biomarker".

Currently, health authorities from different countries are trying to establish monitoring systems for environmental pollutant exposure by using exposure markers. Such systems have already been established in USA through the National Health and Nutrition Examination Survey, and in Spain through the Environment and Childhood Project (INMA).

References:

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