# Endocrine disruptors in food represent a serious risk for their effects on infant's health

SAFFI
Safe Food for Infants in the EU and China

## Interview with Prof. Oya Ercan, chief of Pediatric Endocrinology Division at the University of Cerrahpasa, faculty of Medicine in Istanbul, Turkey.

Endocrine disruptors (EDs) are substances that can be natural or synthetic, which can cause changes in the hormonal and homeostatic systems of the organisms exposed to their action, says Prof. Oya Ercan, chief of the Endocrinology division at the University of Cerrahpasa in Istanbul, Turkey. Some EDs are thought to mimic natural steroid hormones and interact with their receptors as analogues or antagonists due to the presence of a phenolic moiety. Thus, they can act as estrogens, androgens, and antiandrogens. They could also act as thyroid hormone receptor agonists and antagonists. Phytoestrogens are one of the main natural EDs found in our food. Synthetic endocrine disruptors include chemicals used as industrial lubricants/solvents and their byproducts.

### *The critical age for being exposed to endocrine disruptors.*

The developmental age at which exposure to an endocrine disruptor occurs is critical. In the case of exposure to a presumptively "safe" dose during a life stage such as the intrauterine period, when there is no endogenous hormonal exposure, the potential effects of exposures even at very low doses should be considered. In addition, there is evidence indicating that very low doses of EDs might be more effective than higher doses, and nonmonotonic dose responses are not uncommon findings when EDs are studied.

Endocrine disruptors are taken into the body mainly in three ways: inhalation, ingestion, and dermal contact. Some EDs are not metabolized and remain in high levels in the environment for a long time; they are called persistent organic pollutants (POPs). Thus, EDs that were banned even decades ago can be found in human and animal bodies. On the other hand, some can change into compounds that are even more toxic and can be detected at distances from where they were produced or released. These chemicals are transported through water and air currents, as well as migratory animals and enter the food chain. Others, such as BPA, do not remain in the environment for very long but are quite widespread in their use.

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## *Endocrine disruptors in infant food can severely impact the health in adulthood.*

The age of exposure to an ED might be associated with different outcomes. During specific periods of development, exposure to environmental chemicals, drugs, altered nutrition, infections, or stress may cause functional changes in tissues, whereas the same effects may not be seen at other stages of life.

Nowadays, it is well known that changes that occur in the early years of life can pave the way for disease in later stages of life. The term "the fetal basis of adult disease" has been used to describe observations of the maternal environment, the egg, and the external environment and identifies an individual's propensity to develop a disorder later in life. Thus, the fact that EDs can be effective at critical periods of development could coincide with the concepts of fetal basis of adult disease and Developmental Origin of Health and Disease.

## *Collective research efforts are needed to prevent the presence Endocrine Disruptors in infant food*

Endocrine disruptors are mostly synthetic molecules introduced into our lives in an attempt to make living more convenient and easy. However, they have brought with them their own health risks. Children, especially developing fetuses and infants, are more likely to be affected than adults. Studies over time show that the health risks they cause are not only for people today but also for future generations. The use of some EDs has been banned and restricted. However, industry tries to compensate for the restricted chemicals by producing new molecules that in turn could also cause problems. Studies have been done to find out the maximum acceptable levels of these chemicals; however, the atypical dose-response curves of some EDs make determining these levels difficult and questionable from the authors' perspective, especially when fetuses and developing children are affected. One of the most important steps to reduce the health effects of EDs is to increase awareness of the risks in the general population. On the other hand, the many issues related to EDs require the involvement of scientists from different disciplines. Thus, an international multidisciplinary council of scientists must work together to reduce or eliminate health risks related to EDs now and in the future.

**TO READ MORE ON THIS AND THE RESERCH OF Prof. ERCAN:**
**https://www.sciencedirect.com/science/article/pii/S2667009722000136?v=s5**

**The European Union funded project SAFFI (Safe Food For Infants) is addressing the important problem of Endocrine disruptors in infant food.**

**Coordinated by the French National Research Institute for Agriculture, Food and Environment (INRAE), SAFFI bring together 14 partners from seven countries across Europe and 6 partners from two Chinese provinces gathering the required expertise in food safety control, infant food production, analytical and data sciences to achieve the project goal.**

**SAFFI targets food for EU's 15 million and China's 45 million children under the age of three. It aims at developing an integrated approach to enhance the identification, assessment, detection and mitigation of safety risks raised by microbial and chemical hazards all along EU and China infant food chains.**

**SAFFI will discover unexpected contaminants by predictive toxicology and improve risk-based food safety management of biohazards by omics and predictive microbiology.**

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# SAFFI: THE SINO-EUROPEAN CONSORTIUM PARTNER CENTERS

Coordination: French National Research Institute for Agriculture, Food and Environment (INRAE),

- Five international infant food companies (Friesland Campina, HiPP, YIOTIS, Beingmate, YFFC)
- Two food safety authority institutions (ZAIQ and ANSES)
- Three European technological SMEs (CremeGlobal, Computomics, BDS)
- The Union of 49 National European Societies of Pediatric (EPA-UNEPSA)
- Seven leading European and Chinese academic institutions (WU, UNITO, IRTA, IVV; ZJU, ZAAS, JAAS)


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