

CASCADE

What is in the food we give our children? Few things can be of higher interest to consumers today. In a five year project, top European researchers have put their efforts into finding out what baby food really contains. Here are their results.

An increasing number of European babies are either never breastfed at all, or have been breastfed for a very short time. Instead, they are given industrially processed formulas or solids such as vegetable purées. A majority of parents, on average 60%, use commercial infant formula. As a result, the infant formula market has grown significantly and so have the products offered. The first year of infancy is a very vulnerable and sensitive period in human development. Therefore, the effects of infant formulas are of high concern. However, our knowledge of these products and their chemical composition is limited. The aim of the EU funded research project CASCADE (Chemicals as contaminants in the food chain; Network of Excellence, FP6 funded consortium, targeting health risks in food) was to reveal what is in the food we give our children. A specific integrated study on industrial baby foods (infant formulae, solid and beverage foods) was carried out, which integrated the knowledge and tools of a large number of partners in CASCADE. Professor Schramm and his group at Helmholtz Zentrum, München, in Germany, co-ordinated the project.

The main objective of the CASCADE baby food project was to provide the European Union with basic information about the impact of commercial infant formula on the hormone system. Also, the generation

of this information about baby food aims to protect non-breastfed children's health during early development. The scientific focus has been on the effects on the hormone system. Therefore, the sampled infant formulae were tested for effects on the hormone disrupting signalling. In addition, the levels of chemicals and substances that may affect the hormone system, such as cadmium, dioxins, pesticides and polychlorinated biphenyls (PCBs), were determined. Finally, the scientific results were interpreted with regard to nutritional advice and infant food quality.

Our knowledge of what is in the food we give our babies has been limited. This problem has now been tackled in the most comprehensive European study on commercial infant formulae ever conducted. With an innovative, integrated test system, the CASCADE baby food project has analysed whether the infant formulae contain chemicals and substances that affect the hormone system, a system that, if disrupted, might lead to increased risk for several diseases. The food quality and nutritional content have also been analysed. When the recommendations for most of the infant formulae on the European market today are followed, it will result in a nutritional overfeeding of the baby. We have also confirmed that the soy infant formula has high estrogenic activity, which may affect hormonal balance. Our results will form the basis to develop recommendation for the best kinds of foods to give babies in their first months of life.

Ensuring baby food safety in Europe...

The set-up of the study was pretty simple: several market baskets were designed for an 'average European baby'. The baskets were elaborated for monthly diets with milk, soy or hypoallergenic-based infant formulas, and weaned with industrial baby foods and beverages. The monthly diets were made with products of identified brands on the basis of market shares (2007) based on 22 European countries, which was 80% of the whole market. The number of baskets generated was 30 for infant formula, with 62 products, and 15 baskets for solid foods and beverages, with 37 products.

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As a result, we have found that:

- The calculated daily energy intake recommended by the infant formula suppliers tends to be higher than the daily energy intake recommended by WHO;
- Some of the baby food and infant formulae demonstrate hormonal effects; as an example, estrogen receptors were activated in the neuronal system in test models;
- The soy infant formula shows high estrogenic levels and high amounts of phytoestrogen genistein. In addi-



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In the CASCADE baby food project, Dr Marchela Pandelova and Professor Karl-Werner Schramm and colleagues have analysed infant formulae from all over Europe to find out how these products affect our children

tion, the levels of contaminants such as cadmium are of generally higher average levels in soy infant formula samples;

- Hypoallergenic-based infant formula may alter hormonal signalling in the developing infant, ie. inhibit the production of estrogens;
- A tendency to higher amounts of Bisphenol-A (BPA) is observed in solid food. In the infant formula samples, it is no or low detectable amounts;
- The concentration levels of the PCBs and dioxins are negligible or relatively low in all investigated infant formula and solid food samples;
- There are no effects on thyroid signalling by the baby food extracts.

The present study revealed that following the feeding recommendations of the manufacturers of infant

formulae may lead to an oversupply of energy for the baby.

More than 90% of the baby food brands presently on the market in Europe (2007) have nutritionally inadequate recommendations. This means that, if the recommendations are followed, this overfeeding may affect more than 80% of European babies. Worthy of note is that WHO recently changed their recommendations for baby food to lower the energy contents and extend the period of breastfeeding from four to six months.

The baby food analysed here was of excellent quality. With respect to the effects on the hormonal system, there are some major differences between the variant types of infant formulae which will need further investigation about their potential impact on the growing child. Still, before any changes in the baby food market take place, we recommend repeating the

study to clarify and fill in information gaps. The final goal must be able to provide the European consumers with the best feasible baby food.

About CASCADE

CASCADE (EC Contract number: FOOD-CT-2004-506319) is a European Network of Excellence in research, risk assessment, and education concerning endocrine disrupting chemicals in the food chain. CASCADE is financed by the European Union 6th Framework Programme (FP6). The network is co-ordinated from Karolinska Institutet, Sweden, by Professor Jan-Åke Gustafsson. Since the start in 2004, the 200 researchers within CASCADE have been dedicated to targeting health risk in food, to ensure that European food is safe. The baby food project is an example of this, a project to reveal what is in the food we give our children. For more information, please visit www.cascadenet.org.



Professor Dr Karl-Werner Schramm
Geoecologist, Head of Dioxin
Laboratory (EN17025) Research Team
for Ecotoxicology and Trace Analysis

Institute of Ecological Chemistry
Helmholtz Zentrum München
Deutsches Forschungszentrum für
Gesundheit und Umwelt (GmbH)
Ingolstädter Landstr. 1, 85764
Neuherberg Germany

Tel: +49 8 93187 3174
Fax: +49 8 93187 3371

www.helmholtz-muenchen.de

Jill Jönsson
Communication Manager CASCADE
Network of Excellence

Karolinska Institutet
Department of Biosciences
Nutrition Hälsovägen 7, S-141 57
Huddinge Sweden

Tel: +46 8 608 92 37
+46 70 563 9565
Fax: +46 8 774 55 38

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