DIETARY EXPOSURE ASSESSMENT OF SWEETENERS BY THE EUROPEAN FOOD SAFETY AUTHORITY (EFSA)

Main author: Alexandra Tard (European Food Safety Authority - EFSA)

Co-authors: Alexandra Tard, Davide Arcella, Polly Boon, Claudia Cascio, Laurence Castle, Petra Gergelova, Zsuzsanna Horvath, Jean-Charles Leblanc, Oliver Lindtner, Francesca Riolo, Romina Shah

INTRODUCTION

According to Regulation (EC) No 1333/2008, food additives permitted before 20 January 2009 should be subject to a new risk assessment by EFSA, and a programme for their re-evaluation has been set up by Commission Regulation (EU) No 257/2010. To re-evaluate the food safety of sweeteners, EFSA developed two protocols, (i) on their assessment of the hazard identification and characterisation, and (ii) on their exposure assessment. This abstract aims to introduce the protocol on exposure assessment of the 15 sweeteners to be assessed: sorbitols (E 420); mannitols (E 421); acesulfame K (E 950); cyclamates (E 952); isomalt (E 953); saccharins (E 954); sucralose (E 955); thaumatin (E 957); neohesperidine DC (E 959); neotame (E 961); salt of aspartame-acesulfame (E 962); maltitols (E 965); lactitol (E 966); xylitol (E 967) and erythritol (E 968).

METHODOLOGY

Sweeteners have authorised uses and maximum permitted levels in food, defined in EU legislation (Regulation N°1333/2008). To estimate the most realistic exposure to these food additives, data on current uses and use levels are needed. EFSA therefore launched a call for data in order to collect concentration data for the 15 sweeteners, i.e. use and use levels from the interested business operators (i.e. the food industry) as well as analytical data usually coming from national authorities. The EFSA Comprehensive European Food Consumption Database gathers consumption data from European dietary surveys. It is used to provide the essential consumption data for estimating dietary exposure. The FoodEx2 nomenclature is a standardised food classification and description system defining the foods recorded in this database. Using the detailed information available, foods with sweeteners were selected. Consumption data and concentration data are combined at the individual level to estimate dietary exposure. Different scenarios are carried out using the selected foods and either the maximum permitted levels or the levels submitted to EFSA.

RESULTS

The eating occasions selected, i.e. containing a sweetener, are combined with the maximum permitted levels in the regulatory scenario. In the refined scenario, these eating occasions are combined with the available use levels/analytical data. Eating occasions of a few specific food categories (e.g. table-top sweeteners) are all considered as containing sweetener(s) and are therefore considered in the exposure assessment. Dietary exposure is calculated for the consumers only of the selected foods. Several sources of uncertainty are considered. Uncertainty can come from the underreporting of eating occasions containing sweetener(s), from missing use levels/analytical data for food categories authorised to contain sweeteners, from the food categories whether all their eating occasions are considered to contain sweetener or not. The outcomes of the first dietary exposures estimated for some sweeteners are to be presented.

DISCUSSION

EFSA performs dietary exposure assessments of substances ranging from environmental contaminants to substances added to foods. Since 2009, exposure assessment of food additives has improved due to the data available and the scenarios developed. The increased quality of the consumption data made possible the method developed to assess the dietary exposure to sweeteners. The selection of the eating occasions that contain sweeteners is a refined step which is hardly possible for other substances. The estimates of exposure for the ‘consumers only’ population are not standard but specific to sweeteners, and could be representative of dietary exposure for specific populations for which consumption data are scarce (e.g. diabetics).