

Food additives and preschool children

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In a review published in the Proceedings of the Nutrition Society, researchers from University College Dublin looked at the regulatory basis for the authorisation of food additives and focused on the dietary exposure to food additives by young children.

Food additives are substances added to food to perform a technological purpose. Food additives permitted for use in the EU are listed in European Regulation (EC) No. 1333/2008 and include colours, sweeteners, preservatives, emulsifiers, antioxidants and glazing agents. Under EU law, all food additives must be authorised before they can be used in food. This authorisation follows a thorough risk assessment (safety evaluation) by the European Food Safety Authority (EFSA). In addition to evaluating new food additives, EFSA also re-evaluates existing food additives in light of new scientific information and/or changing conditions of use. In this regard, EFSA is currently mandated by the European Commission to re-evaluate all food additives which were permitted for use in the EU before 20 January 2009.

As part of its safety evaluations of food additives EFSA establishes, when possible (i.e. when sufficient information is available), an Acceptable Daily Intake (ADI) for each substance. The ADI is defined as 'the amount of a substance that people can consume on a daily basis during their whole life without any appreciable risk to health'. When re-evaluating previously authorised additives, EFSA may either confirm or amend an existing ADI following review of all available evidence. All additives authorised for use in the EU are identified by an E number. Both the E-number and the maximum level at which the additive can be used are listed in EU legislation.

Exposure assessments are regularly carried out to monitor population intakes and verify that intakes are not above the ADI. Some studies have suggested that children have a higher dietary exposure to additives than adults and there is a high level of interest in the area of food additives and associated behavioural effects in children. Research that has examined this relationship has reported a variety of responses, with many noting an increase in hyperactivity as reported by parents but not when assessed using objective examiners. A report by the International Life Sciences Institute Europe Acceptable Daily Intake Task Force concluded that special safety ADI are not required for children; however, due to the higher dietary exposure to additives, as described earlier, exposure should be monitored for this age group. The authors outline factors which need to be accounted for when assessing exposure by children:

Rapid growth and development

Childhood, is a time of rapid growth and development, when many key organ and tissue systems in the body grow and mature. The potential exists for these developmental processes to be disrupted by exposure to chemicals in high doses.

Higher intakes of foods/beverages

Preschool children are likely to be the population group with the highest exposure to chemicals in the diet due to a combination of factors such as increased food intakes per kilogram body weight compared with those of adults and consumption of a more limited range of foodstuffs during childhood.

Toxicokinetic and toxicodynamic factors

Both toxicokinetic (e.g. absorption, distribution, metabolism and elimination of the chemical to its site of action/toxicity) and toxicodynamics (e.g. target organ sensitivity which determines the extent of an effect or response due to the presence of the chemical) are influenced by age.

The authors emphasise that food additives are closely regulated to ensure they do not pose any risk to human health. They highlight that the investigation of exposure patterns and intake levels of food additives by preschool children needs to take a holistic approach rather than focus on specific hazards.

For further information please see:

[Martyn DM, McNulty BA, Nugent AP et al. \(2013\). Food additives and preschool children. Proceedings of the Nutrition Society, 72, 109-116.](#)