

5. The exposure to Fipronil within an One Health approach

BRAMBILLA Gianfranco

Istituto Superiore di Sanità

Roberto Miniero – Istituto Superiore di Sanità, Rome, Italy

Paola Roncada – Dipartimento di Scienze Mediche Veterinarie, Università degli Studi di Bologna, Bologna, Italy

Cecilia Testa – Istituto Zooprofilattico Sperimentale della Sardegna, Sassari, Italy

Fipronil as a non-competitive blocker of γ -aminobutyric acid (GABA)-gated chloride channels is a registered insecticide present in pesticide and biocide formulations for the agronomic use and to control insects and ecto-parasites in indoor and in pets, respectively. Recently, its off-label use in poultry farming determined residues of fipronil and its metabolite sulfone in dropped eggs of potential risk for acute neuro-toxicity in children under a worst-case food intake scenario. Furthermore, the risk assessment suggest the consideration of aggregate exposure from house dust. Vacuum cleaner bags from 176 Italian households indicated a declared pet's presence (N = 114 samples) was significantly associated with a higher fipronil + fipronil sulfone contamination in dust. Within this context, the 64% of samples fell above the reporting limit of 0.01 mg/kg, with occurrence descriptors for P50, P75 and P99 at 0.31, 3.18, and 62.2 mg/kg dry weight, respectively. The identified presence in dust of fipronil desulfinyl as a degradation product was reported to be 10× more active on the GABA type A receptor of vertebrates than fipronil, and would represent an opportunity to set toxicity equivalency factors. In this approach, *in silico* QSAR approaches are envisaged to refine the uncertainties within cumulative and aggregate exposure assessment in toddlers as a sensitive and vulnerable group. Other advancing aspects would be based on a regular post-marketing monitoring of the non-professional use of biocides, and on the epidemiology of children admitted to antipoisoning centres for suspect intoxication. The systematic presence of fipronil products indoors would represent evidence by which to direct and prioritise environmental and food risks including the persistence of fipronil products in remediated waters and biosolids from civil wastewater treatment plants, and that proposed for agriculture use and for the pest resistance outcomes.

6. Risk assessment of arsenic (As) in rice and rice-based products consumed by toddlers in Switzerland

BRÜSCHWEILER Beat

Federal Food Safety and Veterinary Office (FSVO)

Roxane Guillod-Magnin, Rafael Aubert, Max Haldimann – FSVO

Because rice has the ability to accumulate arsenic, the levels of inorganic arsenic (iAs) in rice are generally 10-fold higher than in other cereals. Therefore, rice and rice-based products contribute

significantly to dietary arsenic exposure. In this study, the occurrence of arsenic was measured in rice and rice-based products intended for toddlers (N = 105). As arsenic toxicity is highly dependent on species and oxidative state, not only total arsenic content, but also species, such as As(III), As(V), MMA(V) and DMA(V), were measured using an ion chromatography-inductively coupled plasma-mass spectroscopy technique. The predominant arsenic species was As(III), with 60–80% of the total arsenic content, followed by DMA(V) and As(V). MMA(V) was measured only at low levels (<3%). Based on German food consumption VELS data, the iAs exposure for toddlers (1–3 years) was estimated in different scenarios. For 'only consumers', rice drinks were the predominant contributor for iAs intake in all scenarios followed by rice-based cereals. In several scenarios, iAs intake was estimated to be higher than EFSA's lower BMDL01 of 0.3 $\mu\text{g kg}^{-1} \text{bw day}^{-1}$ for 1% excess cancer risk, but in no scenario higher than EFSA's upper BMDL01 of 8 $\mu\text{g kg}^{-1} \text{bw day}^{-1}$. Potential health risks cannot be excluded, in particular for toddlers: (1) with coeliac disease, when rice and rice-based products are consumed instead of gluten-containing cereals; (2) with cows' milk allergy, for whom rice drinks replace cows' milk; (3) vegans, who do not drink cows' milk and consume rice drink instead; and (4) from specific ethnic groups who cover their carbohydrate needs mainly through rice. Based on the study results, the FSVO established recommendations for the consumption of rice and rice-based products for parents and their toddlers in Switzerland.

7. Study the occurrence of acrylamide in food in comparison with the long-term trend in the Czech Republic and Slovakia

BUŠOVÁ Milena

Charles University, First Faculty of Medicine, Institute of Hygiene and Epidemiology, Prague

Jana Babjaková – Comenius University in Bratislava, Faculty of Medicine, Institute of Hygiene

Acrylamide (AA) is a contaminant formed in carbohydrate-rich foods during ordinary heat treatment of food at temperatures above 120°C, such as baking, frying, roasting, etc. This is classified as a process contaminant with negative effects on human health. Acrylamide negatively affects the nervous system, reproduction, prenatal and post-natal development. IARC has included acrylamide as a substance that is probably carcinogenic to humans (group 2A). Food safety authorities have recommended the long-term monitoring of acrylamide levels in food.

The aim of our study was to determine the acrylamide content in samples of commonly available foods from market chains in the Czech Republic (CR) and compare these with data on long-term occurrence of acrylamide in food in the CR and the Slovakia (SR). In total, 42 food samples were analysed: potato chips, biscuits, popcorn, cornflakes, extruded breakfast cereals for children and baked muesli. The analysis was carried out in