

The 13th European Nutrition Conference, FENS 2019, was held at the Dublin Convention Centre, 15–18 October 2019

Nitrite intake in Polish population

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Abstract

Nitrites are commonly used as food additives E 249 and E 250 in the production of meat products, mainly to protect them from the contamination of bacteria *Clostridium botulinum*. The nitrite intake should be limited because of their potential carcinogenicity in humans (IARC). The EFSA experts derived an ADI of 0.1 mg sodium nitrite/kg bw per day, corresponding to 0.07 mg nitrite ion/kg bw per day. Besides the meat products the other its sources are: cheese and fish products. The aim of this work was the assessment of nitrite intake (expressed as sodium nitrite) with the diet of Polish population.

The data on sodium nitrite intake were based on the daily consumption of food products and dishes by the representative sample of Polish population (4134 persons) aged 1–96 years studied in 2000 and the actual content of this substance in food products. These data were combined with the results of the chemical analyses made by the State Sanitary Inspection. The risk assessment was based on the sodium nitrite intake calculations of: mean (X), median (Me), percentile 95 (P95) and its comparison to ADI. The data were analysed in the respect of the total studied sample and the group ‘consumers only’. The statistical analyses with use of U-Mann-Whitney test were done.

The daily sodium nitrite intake expressed in mg/persons/day was as follow: 1.87 (X), 1.03 (Me) and 6.88 (P95) in the group of total surveyed persons. The percent of ADI was as follow: 31.8% (X), 17.4% (Me) and 111% (P95). The mean and median values did not exceed the ADI level in all studied groups. However the sodium nitrite intake at the level of P95 exceeded the ADI value in the most surveyed groups, except women. The most exposed group were children aged 1–3 (P95 = 287% ADI). The NaNO₂ intake in the group ‘consumers only’ in mg/person/day was resulted as follow: 2.39 (X), 1.53 (Me) and 7.60 (P95) whereas the % of ADI was: 40.7% (X), 26.2% (Me) and 122% (P95) respectively.

The Polish population was characterized by the average intake of sodium nitrite at the safe level (below ADI). However, there were observed some intake of sodium nitrite (P95 level) which exceed ADI. A balanced and varied diet, with limited consumption of meat products (up to 0.5 kg per week) will help to diminish the risk of excessive intake of nitrites by consumers in Poland.

Conflict of Interest

There is no conflict of interest