

- Article
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Urinary pesticide concentrations in French adults with low and high organic food consumption: results from the general population-based NutriNet-Santé study

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Abstract

An organic diet may reduce dietary exposure to pesticides but findings based on observational data are scant. We determined pesticide concentrations between “organic” and “conventional” consumers from the NutriNet-Santé study. Concentrations were determined using a self-reported food frequency questionnaire. Individuals with a proportion of organic food consumption below 50% were defined as low organic food consumers and those whose proportion was above 50% as high organic food consumers. A matching procedure was then used to obtain two similar subsets of 150 participants, differing mostly by the proportion of organic food consumption. Pesticide and metabolite concentrations (organophosphorus, pyrethroid, and azole compounds) were determined in urine. The molar sums of total diethylphosphates, dimethylphosphates, and dialkylphosphates in distributions across groups were tested using Wilcoxon signed-rank test for matched data. Mean age was 47 years, 60% were women. Significantly lower urinary levels of diethylthiophosphate, dimethylthiophosphate, dialkylphosphate were observed among organic consumers compared to conventional consumers. Our findings confirm that exposure to pyrethroid pesticides in adults may be lowered by switching from conventional to organic foods. This is particularly true for conventional fruit and vegetable consumers, as their exposure may be the highest.

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Author contributions

The author contributions were as follows: JPC, SH, EKG, DL and PG conceived and designed the experiments; and AD performed the urinary dosages. JB and EKG analyzed the data. JB and EKG wrote the paper. All the authors read the results and editing the manuscript. JB and EKG had primary responsibility for final content. All authors read

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Ethics declarations

Conflict of interest

DL acts since 2018 as a scientific expert, with no honoraria or personal funding, in two non-for-profit found: («Fondation Bjorg, Bonnetterre et citoyens » and « Fond de dotation Institut de l'alimentation bio »).

Electronic supplementary material

Supplementary Information - https://static-content.springer.com/esm/art%3A10.1038%2Fs41370-018-0062-9/MediaObjects/41370_2018_62_MOESM1_ESM.docx

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