

Food & Beverage Packaging

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Chemical migration of metals in canned foods; Case study: Sn, Pb, Cd analytical determination

The development and validation of four different methods for the simultaneous determination of Cd-Pb, As-Cu, Cr-Ni and Fe-Mn in canned tomato paste samples will be presented. The validation procedure was conducted according to the terms of the European regulation for the official control of contaminants in foods. For method validation, precision (repeatability and reproducibility) and accuracy by recovery tests, with two different certified materials, have been assessed as performance criteria. The calculated recoveries ranged between 80.0%-120.0% and the % relative standard deviation values were lower than the theoretical one. The validated methods were applied for the determination of these essential and non essential contaminants in 13 different tomato paste samples. Furthermore, a new quality indicator was evaluated in order to provide information about tomato paste quality and the appropriate storage time of an opened canned tomato paste. Finally, a migration test was accomplished based on the calculation of mass balance and the comparison of the elemental content in tomato paste samples packed in aseptic paper package and in canned tomato paste samples. The results showed that lead and cadmium exceeded the European legislation limits for some of the samples, and all other elements were detected in the range of $\mu\text{g kg}^{-1}$ to mg kg^{-1} . This shows that EC should consider about establishing new limits for canned foods. After can opening, migration was taking place only for iron, thus a new quality indicator was applied and evaluated.

Biography

Charalampos Proestos has obtained his PhD in Food Chemistry at Agricultural University of Athens (AUA), Greece, where he continued his Post-doctoral work on natural antioxidants on programs funded by EU and Greece. Currently, he is an Assistant Professor in the Department of Chemistry, National and Kapodistrian University of Athens. He has published more than 30 papers in reputed journals and has been serving as an Editorial Board Member of more than 5 reputed journals.

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