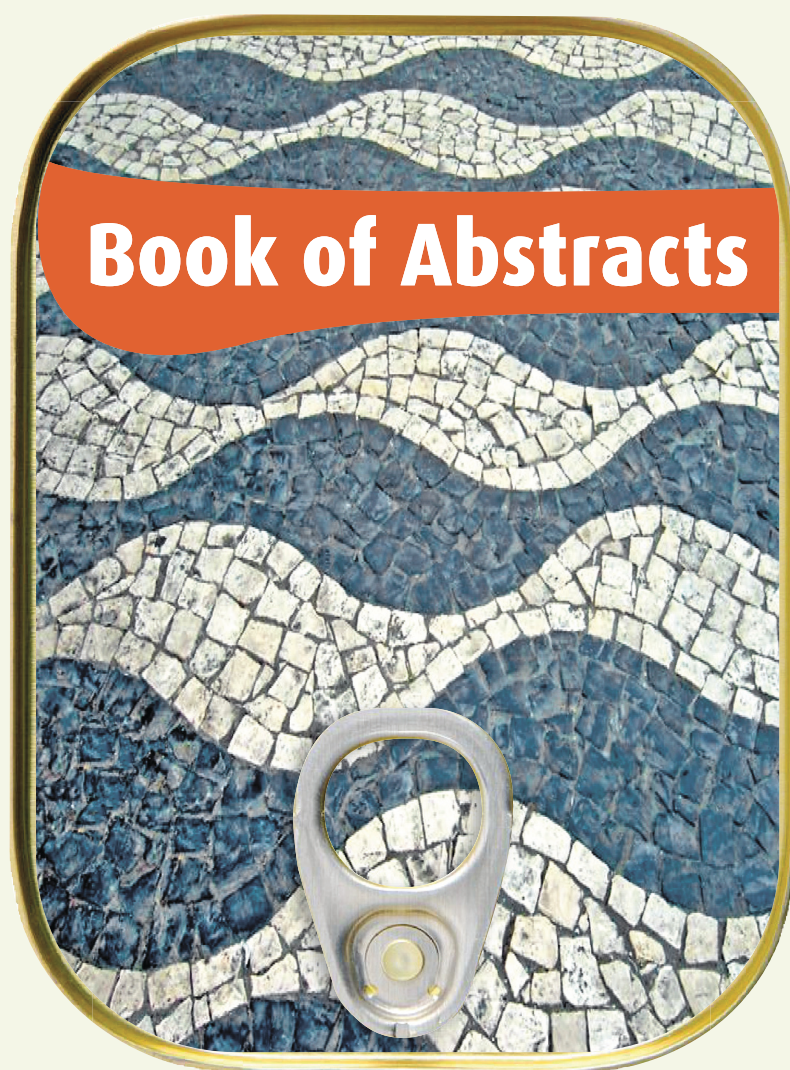


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REVIEW ON NEW ANALYTICAL TECHNIQUES FOR FOOD CONTACT MATERIALS

Joel Pereira; Fátima Poças

CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto, Rua Arquitecto Lobão Vital Apartado 2511, 4202-401 Porto, Portugal

Safety of materials and packages in contact with foods is based on two main pillars: (i) composition of the materials and articles and (ii) interaction between the product and the food, in particular migration of substances of potential concern. Composition is controlled by the raw material supplier and/or converter and determines the potential for migration, while migration itself depends in great extent on the use conditions, being therefore, controlled by the food packer.

The residual substances and those that migrate must be identified and quantified, with focus on the finish product, material or package. It should be taken into consideration the manufacturing process applied and the impact of the use conditions, as impurities and reaction and degradation products can be formed, such as e.g. oligomers. Depending on the objective, different information about the material/package is available and consequently different levels of analytical means is required to perform the evaluation.

Developments on the materials and recognition that direct determinations in food are much more realistic than simulation has increased the difficulties in characterizing, detecting and measuring migrating substances, as for example nano-based materials, with the analytical tools more commonly available in laboratories. Consequently, new techniques are increasingly used for the safety assessment of food contact materials, including chromatographic and optical techniques.

A review on the most recent techniques used for separation, detection, identification and quantification of migrants, such as accurate mass spectrometry, ion-mobility mass spectrometry, atmospheric pressure gas chromatography, two dimensional gas-chromatography and asymmetrical flow field-flow fractionation with multi-angle light-scattering detection, will be presented. Main characteristics and applications will be discussed. One key aspect for reliable and reproducible results is the sample treatment before analysis which is often a time-consuming step. Analytical techniques that need less sample handling will also be focused and a few examples will be given.

Keywords: Analytical techniques, food contact materials, migration