

Poster

VALIDATION OF A METHOD FOR THE DETERMINATION OF SORBIC ACID (E200) AND POTASSIUM SORBATE (E202) IN INDUSTRIAL BAKERY BY HIGH RESOLUTION LIQUID CHROMATOGRAPHY



Lucía Pérez*, Menta Ballesteros, Manuel Santiago

*Departamento de Biología Molecular e Ingeniería Bioquímica, Universidad Pablo de Olavide, Sevilla, España

**Microal S.L., Bollullos de la Mitación, Sevilla

Keywords: HPLC; Extraction methods; Sorbic acid; Potassium sorbate

ABSTRACT

Processed foods production increase, delay nutritional losses in foods and to guarantee the quality of products that reach the consumer makes the use of chemical preservatives as additives more and more widespread. Sorbic acid (E200) and some of its salts, such as potassium sorbate (E202), are widely used as antimicrobial agents in food preservation around the world. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) sets a concentration of 25 mg per kg of body weight as a permissible daily intake. The consumption of a high dose can produce adverse effects such as intolerance, allergy or hives, and both European legislation (Regulation N° 1129/2011) and Spanish legislation (Real Decreto 142/2002) present a list of authorized additives and maximum concentrations allowed in foods (2000 ppm for sorbic acid and potassium sorbate). Therefore, an adequate quantification is important in order to guarantee consumer protection and compliance with quality controls. High-performance liquid chromatography (HPLC) is considered one of the most suitable techniques for the determination of E200 and E202 in food. The objective of this work is to optimize extraction methods in food samples in order to improve the analysis of both preservatives by HPLC. The samples selected for this study were nine industrial bakery products with similar characteristics but from three different companies. In the extraction process, different proportions of acetonitrile and water were evaluated and the extraction with a ratio of 40:60 v / v was found to be the most suitable for HPLC analysis of this type of food. Also, tests were carried out applying different ultrasound times and it was verified that the optimal time was 15 min. Finally, quantification of E200 and E202 was carried out on the chosen products and the validation of the proposed method was performed. In addition, it was verified that none of the products contained concentrations of E200 and / or E202 higher than those permitted by legislation. Results confirm that optimization and validation of a method for the analysis of these foods is necessary as it allows to continue improving the clarity, accuracy and reliability of the measurements.

REFERENCES

- Burana-osot, J., Arunsingkharat, L., Naksuk, M., Naungnamjai, S., & Saetun, T. (2014). Validation of a HPLC method for the determination of benzoic acid and sorbic acid in noodles. *Chiang Mai J. Sci.*, 41, 370-382.
- Davidson, P. M., Taylor, T. M., & Schmidt, S. E. (2013). Chemical preservatives and natural antimicrobial compounds. In *Food microbiology* (pp. 765-801). American Society of Microbiology.
- Mota, F. J., Ferreira, I. M., Cunha, S. C., Beatriz, M., & Oliveira, P. P. (2003). Optimisation of extraction procedures for analysis of benzoic and sorbic acids in foodstuffs. *Food Chemistry*, 82(3), 469-473.
- Pylypiw, H. M., & Grether, M. T. (2000). Rapid high-performance liquid chromatography method for the analysis of sodium benzoate and potassium sorbate in foods. *Journal of chromatography A*, 883(1), 299-304.
- Ulca, P., Atamer, B., Keskin, M., & Senyuva, H. Z. (2013). Sorbate and benzoate in Turkish retail foodstuffs. *Food Additives & Contaminants: Part B*, 6(3), 209-213.