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TU-85

NON-CHROMATOGRAPHIC DISCRIMINATION BETWEEN CHROMIUM(III) AND CHROMIUM(VI) IN FOOD SUPPLEMENTS

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The consumption of food supplements has been increasing all over the world during the last decades and their quality and safety has become a global topic of discussion. In the European Union, the Commission Regulation (EC) No 1170/2009 of 30 November 2009 establishes the vitamins and minerals (annex I) and their forms (annex II) that can be added to foods, including food supplements [1]. Therefore, regarding food supplements quality control it becomes necessary not only to check if the minerals present are authorized and in accordance with the labeled values, but also if they were added in the authorized forms. Chromium (Cr) is usually found in two stable oxidation states: Cr(III) and Cr(VI). The first is an essential micronutrient and the only chemical form authorized to be used in food supplements. On the other hand, Cr(VI) is a strong oxidant and has important toxic effects in humans and animals.

Many analytical procedures have been described for the Cr speciation in different matrices [2]. Our current work aims at the development of a simple and fast non-chromatographic analytical procedure that allows the discrimination between Cr(III) and Cr(VI), prior to its determination using ICP-MS. We have been testing different materials (a polyamine chelating resin, a strong cation exchange resin and activated carbon). Results will be presented in our communication. The polyamine chelating resin (Metalfix-Chelamine) showed very promising results. Batch assays have shown that it allows removing more than 95% of the Cr(III) from the solution, and virtually no Cr(VI). This could be further improved by running the solution through a resin-packed column.

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References:

- [1] Commission Regulation (EC) No 1170/2009 of 30 November 2009, Official Journal of the European Union n.º L 314, p. 36-42.
- [2] L. Trzonkowska, B. Leśniewska, B. Godlewska-Żyłkiewicz, Crit Rev Anal Chem, 46(4) (2016) 305-322.