Accepted Manuscript

Short communication

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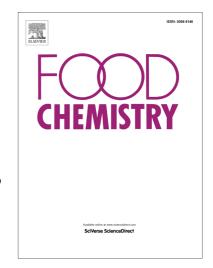
PII: S0308-8146(18)30581-8

DOI: https://doi.org/10.1016/j.foodchem.2018.03.139

Reference: FOCH 22682

To appear in: Food Chemistry

Received Date: 23 October 2017 Revised Date: 23 March 2018 Accepted Date: 29 March 2018



Please cite this article as: Bichon, E., Sitthisack, P., Sérée-Vattier, L., Prévost, S., Schiphorst, A-M., Pouponneau, K., Monteau, F., Le Bizec, B., Determination of L-cysteine origin on the basis of its δ ¹⁵N values, *Food Chemistry* (2018), doi: https://doi.org/10.1016/j.foodchem.2018.03.139

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ACCEPTED MANUSCRIPT

Determination of L-cysteine origin on the basis of its $\delta^{15}N$ values

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ABSTRACT

The majority of L-cysteine is obtained industrially by hydrolysis of animal materials, such as poultry feathers. Despite widespread belief, there is little evidence that human hair is used as a source material and its use is explicitly banned in the European Union (2000/63/EC decision). We developed an isotope ratio mass spectrometric (EA-IRMS) method to determine carbon and nitrogen isotopic ratio in cysteine preparations and related compounds, e.g. cystine and carbocysteine. A threshold relying on the 15 N/ 14 N was established to differentiate between hair and feathers; a value below 6.6‰ indicates a poultry feathers origin. Global uncertainty of measurement was found to be 0.1‰ for δ^{15} N (sample size of 0.5–1.8 mg).

Chemical compounds

Chemical compounds studied in this article

Cysteine (PubChem CID: 5862), Cystine (PubChem CID: 67678) and Carbocysteine (PubChem CID: 1080)

KEYWORDS

EA/IRMS, cysteine, cystine, carbocysteine, validation, origin determination

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