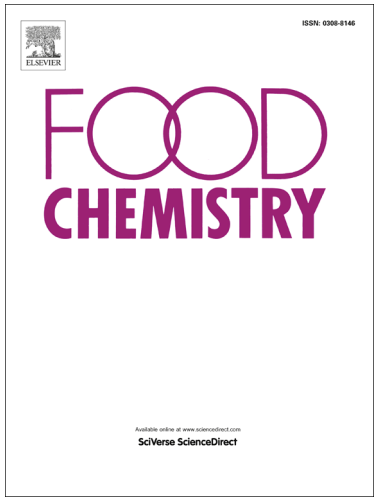

Short communication

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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 $\delta^{15}N$ (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