



Analytical, Nutritional and Clinical Methods

Simultaneous HPLC quantification of total cholesterol, tocopherols and β -carotene in Barrosã-PDO veal

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Abstract

A simple, rapid and sensitive procedure for the simultaneous determination of total cholesterol, tocopherols and β -carotene in meat is described. The method involves a direct saponification of the meat, a single *n*-hexane extraction and the analysis of the extracted compounds by normal-phase HPLC, using fluorescence (tocopherols) and UV–Vis photodiode array (cholesterol and β -carotene) detections in tandem. Rates of recovery of spiked meat samples were 93% for cholesterol, 83–86% for (α -, β - and γ -) tocopherols and 89% for β -carotene. Repeatabilities were high ($CV < 6\%$) for all determined compounds, except for δ -tocopherol. This tocopherol, which is not usually present in meat, showed a much lower recovery percentage (73%) and repeatability (12.8%). This methodology was applied for the quantification of total cholesterol, tocopherols and β -carotene in three muscles (*longissimus thoracis*, *longissimus lumborum* and *semitendinosus*) of the Portuguese traditional Barrosã-PDO veal, obtained from autochthonous calves fed extensively during summer (with the least abundant green pastures) and slaughtered in early autumn (October). Barrosã-PDO veal showed median contents of total cholesterol (0.50–0.56 mg/g) and, depending on the analysed muscle, moderate to high contents of α -tocopherol (3.3–3.9 $\mu\text{g/g}$) and β -carotene (0.07–0.09 $\mu\text{g/g}$), suggesting an high sensorial and hygienic quality.
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Abbreviations: ANOVA, analysis of variance; BHT, 2,4-di-*tert*-butyl hydroxytoluene; CHR, cholesterol; β -CT, β -carotene; CV, coefficient of variation; HPLC, high-performance liquid chromatography; LL, *longissimus lumborum*; LT, *longissimus thoracis*; LSD, least significant difference; PDO, protected designation of origin; ST, *semitendinosus*; TF, tocopherols; UV, ultraviolet.

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