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Meat flavor generation from different composition patterns of initial Maillard stage intermediates formed in heated cysteine-xylose-glycine reaction systems

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ABSTRACT: Volatile compounds formed in model reactions involving synthesized initial Maillard intermediates Gly-Amadori and [¹³C₅]-2-threityl-thiazolidine-4-carboxylic acids ([¹³C₅]-TTCA) in different molar ratios and free cysteine and glycine were investigated by solid-phase microextraction/gas chromatography-mass spectrometry and gas chromatography-olfactometry. The 1:1 ratio composition pattern provided the highest yields of all the sulfur-containing compounds, the potent meaty flavors or their ¹³C-labeled/unlabeled fractions, indicating a moderate level of glycine relative to cysteine was optimum for maximally yielding meaty flavors in complex meat-like Maillard systems containing cysteine as well as glycine. In addition, the 1:1 ratio composition led to formation of ¹³C-labeled molecules of some key meaty flavors e.g. 2-furanthiol representing over 70%, indicating TTCA/glycine reaction was better than

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