**Quantification of δ-lactones in canned coconut milk by stable isotope dilution assay-GC-MS**

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Methods were developed for the synthesis of five deuterated-δ-lactones, namely [3,4-$^{2}H_2$]-δ-octa-, -δ-nona-, -δ-deca-, -δ-undeca- and -δ-dodecalactones. The deuterium labeling occurred on the lactone ring, which provided excellent electron–impact mass spectral resolution of the 2H2-labeled lactones (base ion = 101) from the respective unlabeled lactones (base ion = 99). The use of the 2H2 labeled lactones in stable isotope dilution assays was investigated.

The $^{2}H_2$-δ-lactones were added to freshly opened canned coconut milk before conducting solvent-assisted flavor evaporation. The GC-MS peak areas and response factors were used to determine accurate concentrations of naturally occurring δ-lactones in the canned coconut milk. δ-Octalactone and δ-decalactone were found in the highest concentration among the five lactones quantified. These two lactones also had the highest flavor dilution factors in canned coconut milk as determined by GC-olfactometry and aroma extract dilution analysis.

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