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PERSONAL EXPERIENCE

How to Make Things Work Again – Troubleshooting Using the GC-IDMS Determination of Triacylglycerols as an example

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SUMMARY

This article describes the process of "repairing" a method which has gone out of control, using the gas-chromatographic isotope-dilution mass spectrometric (GC-IDMS) determination of total glycerides in serum, measured as glycerol. The original method used $^{13}C_2$-glycerol as aqueous internal standard and ^{12}C-tripalmitin dissolved in toluene as external standard. The modified method used tripalmitin as internal and external standard, the former being labelled uniformly on the glycerol moiety of tripalmitin ($^{13}C_3$-tripalmitin). In addition, glycerol-free human serum albumin was added to the external standards to "trap" the glycerol physically during evaporation of the extraction solvent after alkaline hydrolysis. The modified method was more stable than the original one and the intensity of the MS-signal in the modified method was at least 100 times stronger in the external standards than in the original method. The precision of the modified method in measuring total glycerides in serum samples (as total glycerol) was better than in the original method, the coefficients of variation being under 1.5% at concentrations between 0.8 and 3.5 mmol/l. (Clin. Lab. 2002;48:635-646)