

9 Comparison of Ammonia and Tetra-Methyl Ammonium Hydroxide extractions of iodine in raw milk

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9.1 Abstract

An official method to determine the iodine concentration by ICP-MS, after a tetra-methyl ammonium hydroxide digestion (closed system), was compared with a procedure that uses an ammonia microwave digestion (open system). Analysis were performed in cow raw milk at two different level of iodine content (level A and B). Analysis of uncertainties in the methods were conducted by the bottom-up approach with the construction of a cause-and-effect diagram containing as principal branches the term of recovery, precision, dilution factor, and concentration. The trueness of methods was evaluated using the certified reference material BCR-151. The ratio cost/sample and lost of information when analysing total iodine from skimmed raw milk were also considered. Ammonia procedure resulted as comparable and efficient as the official method EN15111:2007 with dramatically minor costs. Analysis of total iodine content in skimmed milk could be used for total iodine determination in whole milk without particular loss of information.

Keywords: iodine, ammonia, TMAH, milk