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Validation of γ spectrometry technique to determine potassium in foodstuffs

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The validity of a specific method should be demonstrated in laboratory experiments using samples or standards that are similar to unknown samples analyzed routinely. Aim of this work is the validation of γ the spectrometry technique to determine potassium in foodstuffs. It was evaluated the accuracy spiking a blank of calcium carbonate sigma ultra purity (potassium concentration lesser than 0.005%) with a known amount of pure Potassium chloride, the resulting mixture is measured in a γ -spectrometer with a high efficiency and low background $3'' \times 3''$ NaI (TI) scintillation detector surrounded by heavy shielding and coupled to a PC loaded with the Maestro Program. Obtained results are compared with the expected. Accuracy it also evaluated by comparison with concentration obtained by Atomic Absorption spectroscopy (AAS) in different types of samples (chili, corn meal "masa", beans and tobacco) after acidic digestion, with a resulting $r^2 = 0.98$. It was also evaluated the linearity, range, precision (reproducibility), and detection and quantification limits. Values obtained show that the used technique is acute, reproducible, and accessible to laboratories equipped with a low background scintillation detector.

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