

Quality control: routine analysis of anions in drinking water by HPLC

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1. Introduction – In analytical laboratories the use of validated methods is important to show its qualification and competency [1]. The next level is to maintain performance of the analytical procedure when it is used in routine analysis. The analyst should decide when his method satisfies the quality criteria and when a set of results can be accepted. Quality Control (QC) is defined as a set of activities or techniques whose purpose is to ensure that all quality requirements are being met. [2]. The application of the quality control procedures (internal quality control and participation in proficiency testing schemes) must be able to demonstrate that the method and the analytical equipment provide accurate and precise results, or whether errors and deterioration occurs.

This paper describes the internal and external quality control tools implemented in quantitative determination of anions in drinking water by High Performance Liquid Chromatography (HPLC).

2. Experimental - The determination of anions (chlorides, fluorides, nitrates, nitrites, phosphates and sulphates) in drinking water is routinely carried out in the laboratory by HPLC with a conductivity detector (Waters). The data collection for this study was take place in a laboratory whose method of determination of anions used routinely, is accredited by the Portuguese Institute of Accreditation. Control quality results were collected from fifty working series and participation in three proficiency tests. Is given as an example, the quality control tools used in the nitrate assay.

3. Results and Discussion – The quality control results, obtained in this study, include not only the performance characteristics of the analytical method, but also the equipment used: internal reference samples, measurement standards (quality control standards), blanks, duplicates, spiked samples, blind samples, use of control charts to monitor trends and assessment of correlation of results obtained for different characteristics of a sample, provided that a known relationship exists [2, 3].

4. Conclusions – The implemented quality control plan demonstrates that the method can still provide reliable results. Daily interpretation of control charts identify no conform results and evaluate trends, before acceptance of results. This control quality tools should be then useful for laboratories working with this type of methodologies and that does not have a formal quality system.

5. References

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