



Validation of a 1D ^1H -NOESY experiment for fingerprinting of wheat and flour



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NMR interlaboratory comparisons

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Validation of a 1D ^1H -NOESY experiment for fingerprinting of wheat and flour

by
Innovative Solutions S.r.l.
Spin off company
of the Technical University of Bari

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Index

1. Introduction	7
2. Aims of this interlaboratory comparison	9
3. Provider	11
4. Customer (funder)	13
5. Coordinators (scientific committee)	15
6. Subcontracts	17
7. Timetable	19
8. The scheme: Innovative Solutions NMR Interlaboratory Comparison (IS-NMR-ILC)	21
8.1. <i>Call</i>	21
8.2. <i>Registration</i>	22
8.3. <i>Publication of the experimental instructions for participants</i>	23
8.4. <i>Sample preparation and analytical material description</i>	29
8.5. <i>Sample delivery</i>	30
8.6. <i>NMR analysis</i>	31
8.7. <i>Submission of the results</i>	32
8.8. <i>Data elaboration</i>	32
8.9. <i>Report publication</i>	32
9. Privacy	33
10. Participants	35
11. Statistical elaboration	39
12. Performance assessment	41
13. Homogeneity and stability test	43
14. Temperature calibration	49
15. Results	51
15.1. <i>Tube B</i>	52
15.2. <i>Tube C</i>	73

15.3. <i>Tube D</i>	94
15.4. <i>Tube E</i>	115
16. Final comments	137
17. References	139

1. Introduction

Since its first application as quantitative technique,^[1] NMR spectroscopy has been successfully used for many applications involving several kind of matrixes (small molecules, pharmaceuticals and natural products in both simple and complex mixtures).

One of the major advantages of quantitative NMR (qNMR) is its primary analytical characteristic. It can be applied in the estimation of purity of compounds without using any specific reference standard. Moreover, recent progress in the development of high sensitive instruments allowed for reduction of the detection limits, thus making the technique appealing for analysis of molecules in very low concentrations. A comprehensive recent review aiming to extend awareness of experimental protocols for accurate NMR quantification of analytes is available in “Trends in Analytical Chemistry”.^[2]

Despite the advantages deriving from the use of qNMR and despite the plethora of well documented validation processes (e.g., precision, accuracy, linearity, reproducibility, robustness, selectivity, and specificity), very few official NMR based quantification methods are known.^[3]

With the aim to extend the use of qNMR in official methods, Innovative Solutions organizes NMR interlaboratory comparisons (ILCs) according to ISO/IEC 17043:2010^[4] and reference normative therein. ILCs provide objective standards for individual laboratories, permit them to compare analytical results from different laboratories and represent a way to check the quality and the accuracy of the analytical job. Validation by ILCs is the starting point for official recognition

of the analytical methods.

The ILCs are organized by Innovative Solutions either for its own account or on behalf of third parties. In all cases, a scientific committee is responsible for the experimental design.

The present ILC is organized under the auspices of RETELAB, the network of the laboratories of the Italian Chambers of Commerce, and of SAMER (the laboratory of the Chamber of Commerce of Bari).

2. Aims of this interlaboratory comparison

The aim of this interlaboratory comparison is the validation of a fingerprinting NMR method for classification of wheat and flours. Moreover, the proficiency testing will indicate participants entitled to participate to a possible international network for analysis of wheat and flours by the validated NMR method.

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