

FIT-PTS

Food analysis using Isotopic Techniques—Proficiency Testing Scheme

Proficiency Testing provides an objective means of assessing and documenting the reliability of the data produced by a laboratory, demonstrating competence to the customers and to the accreditation bodies.

A specific scheme dedicated to the isotopic analysis of food was implemented by Eurofins Scientific in 1994, and has continued within the framework of a European research program (1996-1998) called Food analysis using Isotopic Techniques (FIT). Since 1999, this Proficiency Testing Scheme (now called FIT-PTS) was expanded to all laboratories around the world performing stable isotope measurements on food. This scheme is recognised by accreditation bodies as a valid proficiency testing scheme and includes more than 50 laboratories worldwide.



Schedule and order form for FIT-PTS are available on request

Contact : Freddy THOMAS

freddythomas@eurofins.com

[Eurofins Analytics France](#)

Rue Pierre Adolphe Bobierre
BP 42301
F-44323 Nantes Cedex
France

Tel : + 33 (0)2 51 83 21 00

www.eurofins.com

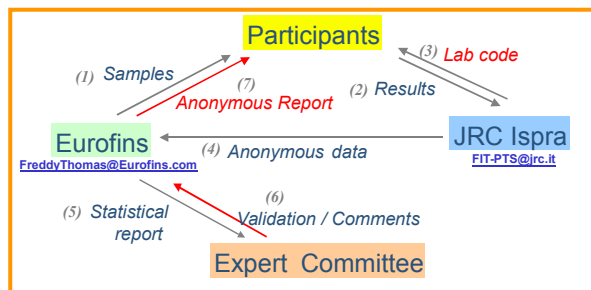
FIT-PTS

Food analysis using Isotopic Techniques

Proficiency Testing Scheme



Organisation and data evaluation



- 3 rounds per year
- 4 samples for each round
- Type of samples:
 - Wine, spirit
 - Fruit juice
 - Pure alcohol
 - Honey
 - Olive oil
 - Vinegar
 - Amino-acid
 - Flour, cereal, rice
 - etc...
- Techniques:
 - EA-IRMS (Combustion, Pyrolysis, Equilibration)
 - SNIFNMR
- Parameters:
 - C13 Ethanol, Sugars, pulp, Honey, Proteins, Raw product, Acetic acid
 - O18 Water
 - N15 Proteins, Raw product
 - H2-Py Proteins, Raw Product
 - O18-Py Ethanol, Raw Product
 - S34 Raw Product
 - (D/H)1 and (D/H)2 Ethanol
 - (D/H)1 Acetic Acid

The data are evaluated by a scientific committee of experts in the field of food analysis proficiency testing :

- Dr Andrew Damant (FSA, UK) ;
- Dr Carsten Fauhl (BfR, Germany) ;
- Dr Claude Guillou (JRC Ispra, EU) ;
- Dr Eric Jamin (Eurofins Analytics, France).

FIT-PTS complies with ISO/IUPAC/AOAC International Harmonised Protocol for Proficiency Testing of analytical laboratories.



Laboratory Anonymity

Participating laboratories report results to Dr. Claude Guillou at the Joint Research Centre, Ispra (Italy) FIT-PTS@jrc.it where they are coded before being forwarded to Freddy Thomas at Eurofins for statistical treatment and finally to the expert committee for validation. The resulting statistical data is sent back to each individual laboratory in an anonymous way, and Dr. Claude Guillou indicates the lab code individually to each participant.

Frequency

Samples are circulated three times a year. Each laboratory chooses the samples he wishes to analyse within a predefined schedule. The deadline for reporting results is usually set 2 months after sample dispatching. A report with statistical analyses is then returned within 1 month.

Methods Concerned

References	Samples	Fractions	Techniques	Isotopes
OIV Resol: MA-E-AS311-05-ENRRMN 2009	Wine	Ethanol	SNIF-NMR	(D/H) _i , (D/H) _j , R
OIV Resol: MA-E-AS312-06-ETHANO		Ethanol		C13
OIV Resol: MA-E-AS312-09-MOUO18		Water	IRMS	O18
AOAC method 2006.05	Vanillin		SNIF-NMR	(D/H) _i
AOAC method 995.17	Fruit juice	Ethanol (from fermentation)	SNIF-NMR	(D/H) _i , (D/H) _j , R
AOAC method 2004.01	Fruit juice and maple syrup	Ethanol		C13
ENV 12140 (CEN/TC174 N108)		Sugar	IRMS	C13
ENV 12141 (CEN/TC174 N109)		Water		O18
Analytica Chimica Acta 340 (1997) 21-29	Vinegar	Acetic acid	SNIF-NMR, IRMS	(D/H)CH3, C13, O18
Analytica Chimica Acta 649 (2009) 98-105				
AOAC method 998.12	Honey	Honey & proteins	IRMS	C13
AOAC method 2006.05	Vanillin	Vanillin	SNIF-NMR	(D/H) _i

Please note that since a few years, more and more samples/analysis have been included in FIT-PTS. For some of them, there is not any official method. FIT-PTS is then a mean to evaluate the accuracy of your in-house method.



Statistical Analysis

The evaluation of data is performed according to the ISO/IUPAC/AOAC International Harmonised Protocol for Proficiency Testing of analytical laboratories. Individual laboratories results are expressed as z-scores: $Z = (\underline{x} - \underline{X}) / \underline{\sigma}$

\underline{x} is the reported result from the participating laboratory,

\underline{X} is the assigned or "true" value for the analyte being determined. In this exercise the assigned values are taken as the robust mean of all reported results.

$\underline{\sigma}$ is the target value for standard deviation. In this exercise the target SD values are derived from recently reported collaborative trial results (AOAC, CEN...) or from the robust standard deviation of all reported values.

If \underline{X} and $\underline{\sigma}$ are good estimates of the population mean and standard deviation, and the underlying distributions are normal, z is normally distributed with a mean of zero and unit standard deviation.

Each laboratory receives together with its evaluation the anonymous Z-score distribution from the round.

