









LEC METHOD FOR ETHYL CARBAMATE ANALYSIS IN BEVERAGE



Introduction

Ethyl carbamate (EC, urethane) is a compound derived from natural biological processes in food and fermented beverages that can be found in some wines or spirits. It has been recognized as a genotoxic carcinogen (A2 group) by the Cancer Research Agency (IARC) since 2013. It is monitored with recommendations in France and strictly regulated by some Countries such as the United States and Canada.

 Canada : maximum concentrations allowed (µg/L)		
	Wines	30
	Fortified wines	100
	Spirits	150
	Eau de vie and liquors	400
	Saké	200

 United States : maximum concentrations allowed (µg/L)		
	Wines	15
	Spirits	125

For France : Recommendation 2016/22 of the European Commission fixed a target value of 1 mg/l of Ethyl Carbamate in eau-de-vie from stones fruits.

Germany : 400 µg/L (Tolerance at 800 µg/L).

During many years LEC realized this analysis in spirits according to the official method *. But this method, which is almost 20 years old, offers very limited performances compared to those required for export. Ethyl carbamate is complicated to analyze, it is difficult to extract and in mass spectrometry have a poor mass response in electronic ions.

LEC has undertaken to develop a new method of ethyl carbamate using liquid-liquid technical extraction and HPLC coupled with fluorimetric detection. This new method offers limits of quantification particularly well adapted to the thresholds requested and for production control.

As for all our methods developed at LEC a validation file has been constituted. Also for this compound LEC participates in the inter-laboratory ring tests of BIPEA* (spirit and wine). Then this method may be the subject of an application for accreditation at a future COFRAC** audit.

* Provider of proficiency testing programs; www.bipea.org/node/87

** Accreditation's gate in France; Accredited EU ETS verifiers according to Regulation (EU) No 600/2012. www.cofrac.fr

* MA-BS-25 for spirits and MA-F-AS315-04 for wine

Performances of the method

Our performances have been validated according to NF-V03-110* revision May 2010, we remind ourselves that these limits are systematically checked during our analysis sessions in order to guarantee them on a routine basis.

* Analysis of agri-foodstuffs - Protocol of characterization for the validation of a quantitative method of analysis by construction of an accuracy profile.

➤ **LIMIT OF DETECTION(1) AND QUANTIFICATION(2) FOR THE SIMPLE DESORPTION METHOD :**

- **Spirits : 7 et 20 µg/L** (minimum volume required : 30 mL).

➤ **GENERAL INFORMATIONS ABOUT BISPHENOL A ANALYSIS IN LIQUIDES :**

- The analysis of this contaminant at thresholds of ppt (ng/L) becomes more and more demanding in terms of sensitivity. To carry out this analysis, our laboratory follows the recommendations of the Technical Guide for Accreditation LAB GTA 26 (3) issued by COFRAC.

- For the validation and the monitoring of the analysis method, we work directly on the matrix (wine or spirits) instead of a synthetic solution to guarantee the reality of the performances announced.

(1) Practical definition of limit of detection (Ld): This is the limit of the analysis method which can confirm the presence of a compound without, however, delivering a quantitative value;

(2) Practical definition of the limit of quantification (Lq): This is the limit of the analysis method which can deliver a quantitative value with associated uncertainty.

(3) Technical Guide for Accreditation - Analyzes of residues of pesticides and organic contaminants in foodstuffs intended for humans or animals, biological matrices of animal origin (www.cofrac.fr).

Find other informations on our website

www.lec-cognac.com

