

Performances of a SPE-UPLC[®]/MS/MS method for the analysis of human pharmaceutical products in tap water.

Sophie Mompelat *, Olivier Thomas, Barbara Le Bot

Environment and Health Research Laboratory, French School of Public Health,
Rennes, France,
Avenue Professeur Léon Bernard, 35000 Rennes, France

* Corresponding author: tel.: +33 (0)2 99 02 29 21; fax:+33 (0)2 99 02 29 29

E-mail address: Sophie.Mompelat@ehesp.fr

Human pharmaceuticals products (HPPs) are emerging pollutants as they have already been detected in natural water [1,2], but also in drinking-water (DW) below the ng/L [3,4]. Advanced analytical methodologies has necessarily to be developed to monitor PPs contamination in DW at such low concentration [5,6].

In this frame, an analytical procedure for the rapid and reliable determination of 20 HPPs, from 10 therapeutic classes, in resource and DW at ng/L level is proposed. After PPs extraction with SPE cartridge, a UPLC[®] separation step followed by tandem MS/MS detection, is carried out.

Particular care will be taken to highlight the good performances of the whole method through the description and discussion of/about its validation performance parameters (according to NF90-210), like repeatability, reproductibility, LQs but also its specificity for the quantification of PPs in raw and DW samples.

References

- [1] Kasprzyk-Hordern, B., Dinsdale, R. M., & Guwy, A. J. (2008) The occurrence of pharmaceuticals, personal care products, endocrine disruptors and illicit drugs in surface water in South Wales, UK. *Water Res.* **42**(13), 3498-3518.
- [2] Tamtam, F., Mercier, F., Le Bot, B., Eurin, J., Tuc Dinh, Q., Clément, M., & Chevreuil, M. (2008) Occurrence and fate of antibiotics in the Seine River in various hydrological conditions. *Sci. Total Environ.* **393**(1) 84-95.
- [3] Mompelat, S., Le Bot, B., & Thomas, O. (2009) Occurrence and fate of pharmaceutical products and by-products, from resource to drinking water. *Environ. Int.* **35**(5), 803-814.
- [4] Benotti, M. J., Trenholm, R. A., Vanderford, B. J., Holady, J. C., Stanford, B. D., & Snyder, S. A. (2009) Pharmaceuticals and Endocrine Disrupting Compounds in U.S. Drinking Water. *Environ. Sci. Technol.* **43**(3), 597-603.
- [5] Tamtam, F., Mercier, F., Eurin, J. I., Chevreuil, M., & Le Bot, B. (2009) Ultra performance liquid chromatography tandem mass spectrometry performance evaluation for analysis of antibiotics in natural waters. *Anal. Bioanal. Chem.* **393**(6), 1709-1718.
- [6] Conley, J. M., Symes, S. J., Kindelberger, S. A., & Richards, S. M. (2008) Rapid liquid chromatography-tandem mass spectrometry method for the determination of a broad mixture of pharmaceuticals in surface water. *J. Chrom. A* **1185**(2), 206-215.