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SOCIEDAD ESPAÑOLA DE CROMATOGRAFÍA
Y TÉCNICAS AFINES · SECyTA 2015**

*XV SCIENTIFIC MEETING
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OCCURRENCE OF POLYCHLORINATED BIPHENYLS (PCBs) IN HONEY SAMPLES FROM DIFFERENT GEOGRAPHIC REGIONS.

Susana Mohr^{1,2}, Laura Herrero^{1*}, Angel García-Bermejo¹, Belén Gómara¹, Ijoni Hilda Costabeber², María José González¹

⁽¹⁾ Department of Instrumental Analysis and Environmental Chemistry, General Organic Chemistry Institute (CSIC). Juan de la Cierva 3, 28006, Madrid, Spain.

⁽²⁾ Post-graduate Program in Food Science and Technology, Centre of Rural Sciences, Federal University of Santa Maria. Av. Roraima 1000, 97119-900, Santa Maria, RS, Brazil.

*lherrero@iqog.csic.es, Tel: +34-915-622-900, Fax: +34-915-644-853

Honey is a natural product produced by *Apis mellifera* bees from the nectar or secretions of plants, and has been consumed by many people around the world as a natural food, in medical therapies, and as food supplements [1]. Polychlorinated biphenyls (PCBs) are a family of toxic and persistent organic pollutants that are present in food and environmental samples at different concentrations levels. For the general population, dietary intake is the main route of PCB exposure, contributing with more than 90% to daily exposure [2]. Some PCB congeners are toxic to humans, and the European Commission has recently established maximum permissible levels of dioxin-like PCBs (DL-PCBs) in foods [3].

Twenty PCB congeners (# 28, 52, 77, 81, 101, 105, 114, 118, 123, 126, 138, 153, 156, 157, 167, 169, 170, 180, 189, and 194), including non-ortho, mono-ortho, and the most abundant PCBs were determined in 35 commercially available honeys collected between 2010 and 2012 in Brazil (n=16), Spain (n=10), Portugal (n=4), Slovenia (n=4), and Morocco (n=3). The analytical procedure followed was previously validated by the working group and briefly consists on liquid-liquid extraction followed by a clean-up step carried out using a multilayer column filled with neutral, acid, and basic modified silica. The final instrumental determination was carried out by GC-QqQ(MS/MS), using the isotope dilution technique as quantification method [4].

The results reveal the presence of low amounts of all PCB congeners (between <LOD to 878 pg/g fresh weight, f.w.) in all samples analyzed. The highest total PCB concentrations were found in Brazilian honeys (median of 1423, range of 513-3267 pg/g f.w.), followed by Portuguese (median of 1214, range of 1073-2210 pg/g f.w.), Spanish (median of 1200, range of 458-2439 pg/g f.w.), Moroccan (median of 1022, range of 955-1496 pg/g f.w.), and Slovenian (median of 558, range of 505-626 pg/g f.w.) honey samples. The WHO-TEQ concentrations are far below the maximum permissible levels for low-fatty foods in the UE legislation [3]. The principal component analysis (PCA) shows differences and similarities between PCB honey profiles from the five countries and those with Aroclors 1242, 1248, 1254, and 1260.

[1] Blasco *et al.*, *J. Chromatogr. A* **1049** (2011) 155-160.

[2] S.M. Hays, L.L. Aylward, *Regul. Toxicol. Pharm.* **37** (2003) 202-217.

[3] Commission Regulation (EU) No 1067/2013, OJL 289, 31.10.2013. p 56-57.

[4] A. Garcia-Bermejo *et al.*, *Anal. Chim. Acta* (in press)

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