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Sommario/riassunto

Five years of Separations are celebrated by a collection of ten feature articles: one review and nine research articles on topics of current interest. Applications of Gas Chromatography for the Analysis of Tricyclic Antidepressants in Biological Matrices are presented focusing on novel extraction techniques and novel materials used for sample preparation due to the great demand for method development for the determination of TCAs in biofluids, especially for therapeutic drug monitoring. Original research articles include the following: 1. Insights into the Mechanism of Separation of Bisphosphonates by Zwitterionic Hydrophilic Interaction Liquid Chromatography: Application to the Quantitation of Risedronate in Pharmaceuticals. 2. A method based on micro-matrix solid-phase dispersion (-MSPD) followed by gas-chromatography tandem mass spectrometry (GC-MS/MS), developed to analyze UV filters in personal care products. 3. The performance of a vibratory shear-enhanced process (VSEP) combined with an appropriate membrane unit for the treatment of simulated or industrial tannery wastewaters. 4. A method for the analysis of thyroid hormones by liquid chromatography-mass spectrometry that was used for the dissolution testing of single- and dual-component thyroid hormone supplements via a two-stage biorelevant dissolution procedure. 5. A method involving the collection and determination of organic and inorganic gunshot residues on hands using online in-tube solid-phase microextraction (IT-SPME) coupled to miniaturized capillary liquid

chromatography with diode array detection (CapLC-DAD) and scanning electron microscopy coupled to energy dispersion X-ray (SEM-EDX), respectively, for quantifying both residues. 6. The gas chromatographic retention behavior of 16 polycyclic aromatic hydrocarbons (PAHs) and alkylated PAHs on a new ionic liquid stationary phase, 1,12-di (tripropylphosphonium) dodecane bis(trifluoromethanesulfonyl)imide (SLB®-ILPAH) intended for the separation of PAH mixtures, which was compared with the elution pattern on more traditional stationary phases: a non-polar phenyl arylene (DB-5ms) and a semipolar 50% phenyl dimethyl siloxane (SLB PAHms) column. 7. The Multiple-Stage Precursor Ion Separation and High Resolution Mass Spectrometry toward Structural Characterization of 2,3-Diacyltrehalose Family from Mycobacterium tuberculosis 8. The use of micellar electrokinetic chromatography (MEKC) for studying the hydrophobic character of modified Monomethyl Auristatin E derivatives, as Novel Candidates for the Design of Antibody-Drug Conjugates, which are promising state-of-the-art biopharmaceutical drugs for selective drug-delivery applications and the treatment of diseases such as cancer. 9. The use of recycled diatomaceous earth as the extraction phase in solid phase microextraction (SPME) technique for the determination of polycyclic aromatic hydrocarbons (PAHs) in river water samples, with separation/detection performed by gas chromatography-mass spectrometry (GC-MS).