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### Studying the affinity of pharmaceutical substances to accumulate in the Danube River sediments

Sediment is considered the final component of the aquatic environment in which most pollutants accumulate. The capacity of chemical compounds to accumulate in sediment depends on their physicochemical properties as well as on the morphological structure of the sediments. The distribution of organic contaminants in sediments is influenced in particular by the molecular weight of the compound, the concentration in which it is found in the aquatic environment, the pKa values and the octanol/water partition coefficient (log Kow) of each pollutant. The present work aims to study the capacity of different classes of pharmaceutical compounds to accumulate in sediments sampled from the Danube River depending on their morphological structure. For this purpose, sediment samples with different granulometry were analyzed in order to investigate the presence of pharmaceutical compounds. A number of 9 pharmaceutical substances belonging to the class of antibiotics, nonsteroidal anti-inflammatory drugs, antidiabetics, antiepileptics and psychoactive compounds were analyzed. The results obtained revealed a low affinity of this class of emerging pollutants for the solid phase of the aquatic environment represented by sediment. This is mainly due to the low values of the octanol/water partition coefficient (log Kow) of the pharmaceutical compounds analyzed in the present study. However, in some sediment samples the presence of pharmaceutical residues such as caffeine, metformin and carbamazepine was identified. Most pharmaceutical compounds were identified in sediment samples that presented fine-grained particles.

#### Biography

Valentina – Andreea Călmuc PhD in Industrial Engineering, "Dunărea de Jos" University of Galați, Romania, from 2024. She is currently a research assistant within the REXDAN Infrastructure where she is the head of the chromatography laboratory and her main research field is the analysis of pharmaceutical compounds from environmental samples. She has published 21 papers in Web of Science indexed journals. Until now, she has been part of the implementation team of 15 national and international projects.