**Effect of humic substances and chloride ions on the photodegradation of 4-MBC**

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The UV filters are organic compounds that absorb ultraviolet radiation and have widely been used in the cosmetic industry as personal care products (PCP) in order to mitigate the negative effects of human exposure to ultraviolet radiation. They are considered a new class of contaminants - emerging contaminants. In recent years the use of UV filters has increased significantly which raises some questions regarding their impact on the environment, specifically the aquatic environment due to their tendency to bioaccumulate. Among the various UV filters, 4-methylbenzylidene camphor (4-MBC) is one of the most used UV filters and authorized in the European Union. Photodegradation induced by sunlight is the main pathway for abiotic degradation of the contaminants in surface waters, contributing to the self-remediation, or in some cases to the formation of more toxic photoproducts. According to the literature, there is few studies relatively to the photodegradation of UV filters in natural waters, being the degradation studies more focused on the photostability of the UV filters in creams.

Thus, the main objective of this work was to evaluate the photodegradation of 4-MBC in waters, studying the effect of humic substances and chloride ions. Direct photodegradation of an aqueous solution of 4-MBC (4 mg L-1) follows a biexponential decay with a degradation rate constant (kd) of 0.040 ± 0.003 h-1 and an half-live (t1/2) of 17.3 ± 1.3 h. In the presence of natural fulvic acid extracted from River Vouga (Aveiro, Portugal) and commercial humic acids there is a slightly increase of the degradation rate constant however the results allowed to conclude that the presence of organic matter has no significant effect on degradation of 4-MBC. However, a significant effect on degradation of 4-MBC was observed in the presence of chloride ions (kd=0.068 ± 0.008 h-1 and t1/2 = 10.1 h). HPLC-MS/MS identification of the photoproducts of 4-MBC in aqueous solution was performed.