**Fenton-like oxidation of small aromatic acids from biomass burning in atmospheric water and in the absence of light: Identification of intermediates and reaction mechanisms**

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The night period is important for the occurrence of Fenton-like oxidation of small aromatic acids from biomass burning in atmospheric waters, such as, benzoic, 4-hydroxybenzoic and 3,5-dihydroxybenzoic acids, originating new chromophoric compounds apparently more complex than the precursors (Santos & Duarte 2015). However, the chemical transformations involved in such process are still unknown. In this work there were identified by gas chromatography-mass spectrometry (GC-MS) the organic intermediate compounds formed during the Fenton-like oxidation of the three aromatic acids from biomass burning above refered, in water and in the absence of light, which in turn allows to disclose the chemical reactions and mechanisms involved. For the three aromatic acids the oxidation intermediates identified mantain the benzene ring. The results suggest that the hydroxylation of the three small aromatic acids is the main step of Fenton-like oxidation in atmospheric waters during the night, and that the occurrence of decarboxylation is also an important step during the oxidation of the 4-dihydroxybenzoic and 3,5-dihydroxybenzoic acids. Moreover, it is important to highlight that the majority of the compounds produced are also small aromatic compounds, which may continue aggressive to the environment in general, also harmfull for the human beings due to their potential carcinogenicity.

Reference: Santos P.S.M., Duarte A.C. (2015) Fenton-like oxidation of small aromatic acids from biomass burning in water and in the absence of light: Implications for atmospheric chemistry. Chemosphere. 119, 786-793.