

COMPARISON OF CADMIUM BINDING BY HUMIC AND FULVIC ACIDS EXTRACTED FROM COMPOST SAMPLES OF DIFFERENT FEEDSTOCK

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Compost is a bio-sustainable material produced by the controlled decomposition of the organic wastes. Composting can be employed for the urban organic waste treatment in alternative to incineration or landfill disposal [1]. The properties of compost are closely related to the presence of humic-like substances (HS). Both fulvic acids (FA) and humic acids (HA) contain a significant amount of carboxylic acids and phenolic groups that are responsible for some of their properties like solubility and ability to complex metal ions [2].

In the scope of the project Res2ValHum [3], composts produced from different feedstock were analysed and compared regarding the ability of the FA and the HA extracts to bind Cd²⁺. The free cadmium ion concentration was measured using the electroanalytical technique AGNES (absence of gradients and Nernstian equilibrium stripping) [4]. The cadmium binding by FA and HA extracts of two compost samples: compost of algae (CA) and compost of sludge sewage (CSS) is illustrated in Figure 1. Results indicate that the extent of the binding of cadmium by FA is similar despite the nature of the compost. In opposition, the HA extracts from the algae compost exhibit a larger capacity to bind cadmium ion in comparison to the extracted from the sludge sewage compost. These results indicate that the nature of the feedstock seem to affect more the structure of the HA (in comparison to the FA) formed during the composting process. The chemical characterization of these extracts by different analytical techniques are in course in order to fully understand the referred effect.

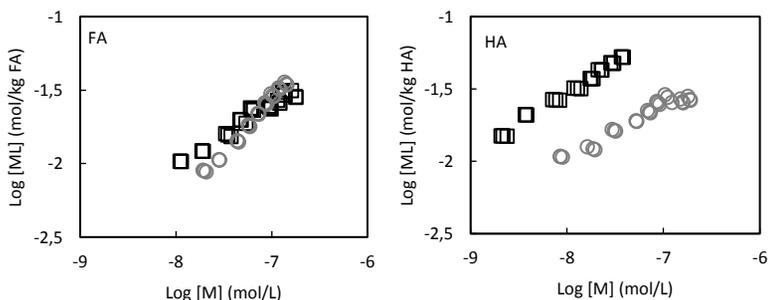


Fig.1. Experimental data obtained by AGNES, for the cadmium binding by fulvic (FA) and humic acids (HA) of two composts: compost of algae (CA, □) and compost of sludge sewage (CSS, ○).

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