Geophysical Research Abstracts,
Vol. 10, EGU2008-A-01850, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-01850
EGU General Assembly 2008

Fractionation of alkali-soluble peat organic matter with the application of XAD-8 and XAD-4 resins used in tandem

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Soil organic matter (SOM) participates in different kinds of interactions and fulfils various ecological functions. Its reactivity in the environment is due to the heterogeneity and poly-chemical properties of composing compounds. It is of importance to isolate and investigate fractions of SOM with definite physicochemical characteristics and functional activity. Chromatographic methods of SOM fractionation are very effective and widely used for mineral soils, but there is a lack of information concerning their using for organic soils.

A fractionation of alkali-soluble organic matter (OM) of a peat soil by the method of adsorption column chromatography with the application of hydrophobic resins XAD-8 and XAD-4 used in tandem was carried out. A fractionation scheme was provided. 5 fractions of OM of humic and non-humic character was produced, differing by hydrophobicity: humic acids (HA), fulvic acids (FA), hydrophilic, or XAD-4-acids, hydrophobic neutral and hydrophilic neutral fractions. A comparative investigation of peat soil HA, FA and XAD-4-acids by VIS-UV, IR- and ^{13}C NMR-spectroscopy was

done. It was found that XAD-4-acids differ from FA by lower content of aromatic carbon, much less developed poly-conjugation systems and a very high amount of carbohydrate structures. It was shown that FA isolated by the method of adsorption on XAD-8 resin had much less content of polypeptide and especially carbohydrate structures, higher portion of aromatic and carboxyl carbon, as well as more developed poly-conjugation systems in comparison to FA isolated as barium fulvates.