

THIN LAYER CHROMATOGRAPHY AS MODEL SYSTEM FOR INVESTIGATION OF THE MOBILITY OF METALS IN SEDIMENTS. I

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The chromatographic studies of the behaviour of some benzene derivatives related to humic acids in connection with Fe(III)-ion were published earlier (HADZIJA *et al.*, 1987; HADZIJA *et al.*, 1988; KVEDER *et al.*, 1992). The natural process of metal mobility in soil and sediments was simulated by using the model system composed of silica gel plates impregnated with aged iron nitrate (representing mineral iron hydroxy/oxide support) on which the model compounds representing the types of structures that probably occur in humic acids were chromatographed with water as developer.

By this simple experimental system we could follow the conduct of the compounds with various functional groups and deduce of their abilities to detach the Fe(III)-ion from the support to the solution. We also examined the behaviour of commercial humic acids under the same conditions and compared their behaviour with those of the model compounds (ISKRIC *et al.*, 1994). The results are given in the Table 1 where R_f values represent parameters of the solubility and mobility of the complexes formed by detaching of Fe(III)-ion from the support. Comparing the R_f 's of the model compounds with those of humic acids one can see that humic acids moved considerably, as well as catechol and salicylic acid. Thus it can be concluded that humic acids tested have similar functional groups in their structures which can detach Fe(III)-ion from the support.

Table 1 : $R_f \times 100$ values of hydroxy and carboxy benzene derivatives and humic acids on Fe(III)-impregnated silica gel plates. Developer: tap water

No	Compound	Structures	$R_f \times 100$	Ref
I	Catechol		78	3
II	Pyrogallol		0-71	3
III	Benzoic acid		16	3
IV	o-Phthalic acid		23	3
V	Salicylic acid		90	1
VI	Gallic acid		0-37	3
VII	3,4,5-Trimethoxy benzoic acid		6	1
IX	Humic acid "EGA"		0-88	4
X	Humic acid "Fluka"		0-88	4
XI	Humic acid "GMS"		0-60	4

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