

**Identification of arsenobetaine degradation products by means of HPLC - parallel ICPMS- and ESIMS-detection**

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With respect to the assessment of toxicity of new arsenic species in the environment and especially in foodstuffs their quantification and identification is vitally. LC-ESIMS can also be applied for elemental and molecular detection using different fragmentor voltages but needs more time for subsequent runs. Using both techniques separately (LC – ICPMS, LC – ESIMS) showed the big potential in speciation analysis. Come together of ICPMS for elemental information (quantification) and ESIMS for molecular information (identification) after splitting of the eluent behind the chromatographic separation could be a suitable way for analysis of arsenic species for which standards are unavailable.

The simultaneous parallel ESI- and ICP-MS was applied to identify possible metabolites during the interaction of arsenobetaine with natural zeolites. Zeolites are well known sorbents to remove heavy metals and metalloids from waste and drinking water. Previous investigations on sorption of arsenic species on natural zeolites showed adsorption of arsenic compounds besides transformation and metabolisation to more toxic species. Under this aspect the interaction of non-toxic arseno-organicals with zeolites broad applied as sorbents in water treatment and newly as additives in foodstuffs and animal feed was of special interest. Arsenobetaine mainly produced by freshwater and marine organisms is known to be a candidate of low-toxicity. To estimate the possible toxicological risk originating from arsenobetaine in contact with natural and synthetic zeolites, small particles (<1mm diameter) of a natural occurring zeolite (Mexico) of clinoptilolite type was mixed with an AsB solution (5mg As L<sup>-1</sup>) and stored for several days at room temperature.

After a contact time of 50 days the degradation of AsB proceeded with different yields in the case of the natural Mexican zeolites but to the same products. In contrast no additional components could be detected in the control samples (AsB only, and AsB with synthetic zeolite).

By overlaying and comparison with peaks monitored by ESIMS the degradation products DMA (m/z 139) and DMAA (m/z 181) could be identified clearly on the basis of retention times and their molecular mass [M+H]<sup>+</sup>. Two additional remarkable peaks with retention times between 400 and 430 s were also detected, but could be identified neither by means of their molar mass nor of the appropriate fragments. Another arsenic species could not be identified so clearly with [M+H]<sup>+</sup> m/z 165, because two isomeric forms can exist (dimethylarsinoylpropane (DMAP) or dimethyl (3-hydroxypropyl) arsine (DMHPA)). Indeed the single quadrupole MS was not sufficient for identification of isomeric compounds.