

Arsenic speciation in whelks (*Buccinum undatum*)

Dagmar Urgast, Andrea Raab and Jörg Feldmann

TESLA (Trace Element Speciation Laboratory)
University of Aberdeen, College of Physical Science, Chemistry, Meston Walk
Aberdeen AB24 3UE, Scotland ,UK

Whelks (*Buccinum undatum*) are fished on the coasts of Great Britain and are sold to Mediterranean countries and Asia for eating. As it is common knowledge that seafood can contain high amounts of arsenic, data about the arsenic distribution in the whelks had to be provided for risk evaluation purposes concerning the consumption of the whelks.

In a previous work it was found that the whelks can contain Arsenic levels up to 43.7 mg/kg (fresh weight). The various arsenic species show large differences in their toxicity. It is widely acknowledged that arsenobetaine is a non-toxic form of arsenic whereas the inorganic arsenite and arsenate are the most toxic forms of arsenic. Therefore a total arsenic concentration does not say very much about the toxicity of a food sample and speciation is needed.

In this work anion and cation exchange HPLC-ICP-MS and cation exchange HPLC-ICP-MS/ESI-MS as well as anion exchange HPLC-HG-AFS were used for speciation analyses of H₂O/H₂O₂-extracts of whelks.

During our studies it was found that the arsenic present in the whelks consists of 0,1 ± 0,1 % (n=12) inorganic arsenic, 67 ± 23 % (n=6) arsenobetaine and some other unidentified arsenic species. This means that the main arsenic species in the whelks is the non-toxic arsenobetaine.