Analysis of Technetium Species and Fractions in Natural Seaweed Using Biochemical Separation and ICP-MS Measurement - DTU Orbit (21/08/2019)

Analysis of Technetium Species and Fractions in Natural Seaweed Using Biochemical Separation and ICP-MS Measurement

An extremely high accumulation and retention of technetium in marine plants, especially brown seaweed, makes it a unique bioindicator of technetium. In the present work, a novel approach was developed for the speciation analysis of technetium in seaweed, wherein a series of biochemical separations was exploited to isolate different species of technetium. Inductively coupled plasma mass spectrometry (ICP-MS) was applied for the measurement of $^{99}\text{Tc}$ after thorough radiochemical preconcentration and purification. The results show that the distribution of technetium species in seaweed is relatively dispersive. Besides the inorganic species of $\text{TcO}_4^{-}$, most of technetium (>75%) combined with organic components of seaweed such as algin, cellulose, and pigment. This investigation could provide important fundamental knowledge for studying the processes and mechanisms of $^{99}\text{Tc}$ accumulation in the natural seaweed.

General information
Publication status: Published
Organisations: Center for Nuclear Technologies, Radioecology and Tracer Studies, Lanzhou University
Number of pages: 7
Pages: 11931-11937
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Analytical chemistry
Volume: 88
Issue number: 23
ISSN (Print): 0003-2700
Ratings:
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6.08
Web of Science (2016): Impact factor 6.32
Web of Science (2016): Indexed yes
Original language: English
DOIs: 10.1021/acs.analchem.6b03837
Source: FindIt
Source-ID: 2348659511
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review