ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/316912220

Heavy Metal Concentrations in Mosses Collected from Livingston Island (Antarctic)

Conference Paper · May 2017

CITATIONS
0

READS
32

2 authors:

Kerem Canlı
Dokuz Eylul University
110 PUBLICATIONS **692** CITATIONS
SEE PROFILE

Barbaros Çetin
Dokuz Eylul University
22 PUBLICATIONS **240** CITATIONS
SEE PROFILE

All content following this page was uploaded by Kerem Canlı on 23 July 2017.

The user has requested enhancement of the downloaded file.

Heavy Metal Concentrations in Mosses Collected from Livingstone Island (Antarctic)

Kerem Canlı[1] and Barbaros Çetin[1]

[1]*Dokuz Eylul University, Faculty of Science, Department of Biology, İzmir*

Corresponding Author: e-mail: biyoloji@gmail.com

Introduction: Bryophytes are able to concentrate heavy metals to extremly high concentrations owing to the high cation exchange capacity of their tissues, lack of protecting cuticle and large surface-to-weight ratio. Moreover bryophytes are extraordinarily tolerant and may even stand incrustation of the biomass by precipitated heavy metal salts. Because of these properties, bryophytes has been used for many years to detect heavy metal pollution.

Material and Methods: In this study, 2 moss samples collected from Livingstone Island (Antactic) were used. Two taxon, *Polytrichum alpinum* Hedw. (Polytrichaceae) and *Sanionia uncinata* (Hedw.) Loeske (Amblystegiaceae) were defined. EPA 3051 (microwave assisted acid digestion) and SM 3120 B (metals in water by plasma emission spectroscopy) used to measure heavy metal concentrations.

Results: According to the results of research for *P. alpinum*; 1,5 mg/kg arsenic, 1,6 mg/kg chromium, 2,4 mg/kg cobalt, 8,6 mg/kg copper, 3476 mg/kg iron, 2,14 mg/kg lead, 2,1 mg/kg nickel and 20,9 mg/kg zinc deposition were determined. According to the results of research for *S. uncinata*; 1,34 mg/kg arsenic, 1,1 mg/kg chromium, 1,8 mg/kg cobalt, 5,1 mg/kg copper, 2526 mg/kg iron, 1,8 mg/kg lead, 1,8 mg/kg nickel and 14,6 mg/kg zinc were determined.

Discussion: Periodic studies need to be carried out in order to be able to observe the accumulation of heavy metals more clearly. The data we have obtained show that for Antarctica there is a serious danger of heavy metal pollution. Human activity in Antarctica, natural sources, or air currents from another part of the world can be the cause of this accumulation. Further studies should be done to determine the actual level of pollution and its cause.

Keywords: Livingstone, Antarctic, Heavy Metal, Bryophyte, Pollution

Acknowledgement: We would like to thank TAKBAM and BAI for supporting this study and we would like to thank to Dr. Orhan Polat for taking samples from Livingstone Island.