3rd International Conference on Traditional Medicine, Phytochemistry and Medicinal Plants

(Online Meeting) **November 2-4, 2020**

Effect of Pb contaminated soil on germination and development of *Sinapis alba sps.*

Anda Gabriela Tenea[1,2], Gabriela Geanina Vasile[1], Cristina Dinu[1], Mihaela Mureseanu[2]

[1]*National Research and Development Institute for Industrial Ecology ECOIND, 71 Drumul Podu Dambovitei, zip code 060652, Bucharest, Romania*

[2]*Craiova University, Science Faculty, Chemistry Department, 107i Bucharest Road, Craiova, Romania*

Presenter Contact Details:
Full name: Anda Gabriela Tenea
Email ID: anda.tenea@incdecoind.ro
Contact number: +40 787898271
Sessions: Phytochemical Studies of Medicinal Plants
Interested in: Poster Presentation
Abstract

The mineral component of the soil fixes the lead especially on clay minerals, and the organic component of the soil fixes the lead on humic acids. Consequently, over 80% of the lead from soil is bound, and only a small part remains bioavailable to the plants. This explains why in lead-polluted soils the toxicity on plants is not proportional to the total lead content [1].
The study of *Sinapis alba* (SIA, MicroBiotests Belgium) grown on a rich organic matter soil (12% humus), at two levels of contamination with Pb, confirms at the end of experimental tests that the added Pb content remains in proportion of 96% in sol. The concentrations of 40 mg/kg Pb (Pb I), respectively 80 mg/kg Pb (Pb II) were tested, the last one being a value located above the alert threshold for agricultural soils according to the Romanian legislation.
Excessive concentrations of lead in the soil led to decreased germination process [2], a fact confirmed also by the results of this study. Germination in the Pb I test was 10% lower than in the control test, respectively 30% lower in the case of the Pb II experiment compared to the control test, where 85% of seed were germinated.

Both experiments show that mustard plants do not bioaccumulate lead at this level of concentration, recording values of transfer and bioaccumulation indices lower than 1 or zero. Thus, lead is mainly found in the root, the plants do not accumulate lead either in the stem or in the leaves. The plants from the contaminated experiments showed more intense pigment, the chlorophyll content for each experiment being higher than the value of the chlorophyll concentration in the control sample.

Biography:

1. G. Bonanno, J. A. Borg, Vincenzo Di Martino, "Levels of heavy metals in wetland and marine vascular plants and their biomonitoring potential: A comparative assessment", *Science of the Total Environment* 576, 796–806, 2017;
2. Parmar, B. Dave, A. Suhdir, K. Panchal, R.B. Subramanian, Physiological, Biochemical and Molecular Response of Plants against Heavy Metals Stress, 2013.