Contribution ID : **59** Type : **Poster**

EVALUACIÓN DEL EFECTO GENOTÓXICO DURANTE LA FITOEXTRACCIÓN DE Pb POR Typha latifolia (Espadaña)"

Wednesday, 12 August 2015 17:30 (1:00)

Abstract content

The aquatic macrophyte Typha latifolia (cattail) has the required characteristics to be used in phytoremediation because of its rapid growth, easy spreading and harvesting. Previous studies indicated T. latifolia has the ability to remove (in situ and ex situ) and accumulate Cd, Pb, Cr, As, Mn y Fe. However, although the information reported phytoremediation capacity of this plant species, still unknown the possible adverse effects associated with exposure to toxic elements and level of possible damage at the molecular level in this species. Therefore, a study was developed for the isolation of nuclei from young root of Typha latifolia for their subsequent evaluation at the molecular level. Plants of T. latifolia were collected from from ponds not previously contaminated with metals (Valles, S.L.P. and San Luis Potosí, S.L.P). To the isolation of nuclei it was used principals roots (rhizomes) and secondary roots of plants, and three solutions, (PBS phosphate buffered saline, PBS phosphate buffered saline 1:1 and Tris-MgCl2). The most efficient solution to the isolation of nuclei was Tris-MgCl2 buffer, because by observing in a bright-field microscope using this buffer solution, it was found that the isolated nuclei were more abundant than those obtained with other buffer solutions used. Subsequently, preliminary tests of alkaline comet assay to assess DNA fragmentation were performed. It was subsequently implemented the alkaline comet assay technique to evaluate the DNA fragmentation. The results showed that the best tissue for isolation of nuclei were apical Typha latifolia roots. Although still genotoxic damage was not evaluated in this plant species, it was possible to standardize the technique to the isolation of nuclei. Considering that synchrotron light permits detailed observation of nature complicated spaces that are inaccessible to observe with the visible light, there is interest in using the synchrotron light as in the scope of microscopy, this type of light provides high resolution images of cells into more detailed conditions than those offered by conventional techniques. This would help to further the study of the composition of the root cells of T. latifolia. Furthermore, the use of synchrotron light could know the exact location of the heavy metals in the tissues (root and aerial) of plant. With the results of this research was generated new scientific knowledge to continue with the evaluation of genotoxic damage from exposure to lead from this plant species.

Summary

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Session Classification : Posters I