Observing the Advancement of a Mitotic Index on Allium cepa L. Root Cells whilst Exposed to Diethyl Phthalate

Ribeiro, Alicia (School: Escola Americana de Campinas)
de La Concha, Maria Jose (School: Escola Americana de Campinas)

This project investigates the impact of Diethyl phthalate on cells of Allium cepa L, by measuring alterations in mitotic index, of the organism's roots. The main factor that justifies this investigation, is the presence of Diethyl phthalate, in a wide range of products of daily use, thus providing a great level of exposure to humans. This compound can also be found in in the environment, by result of Migration, leaching and oxidation. The Mitotic Index will be utilized on this experient as a data collection method and a reference for measuring the harm Diethyl Phthalate may cause to biological systems. The control trials showed a an average mitotic index of of 18.16 out of 50 cells, thus 37.5%. The trials for the onion roots in contact with Diethyl Phthalate experience a decrease in cell division, as in average out of 50 cells there are 5.6 cells undergoing mitosis, thus 11%. As may be seen there is a decrease of 26.5% in mitosis activity once the roots are in contact with the Diethyl Phthalate. An observation which must be considered for analysis, was the an abnormal growth of Xylem Vesicles compared to the control roots. These results portray how the exposure to Phthalates, specifically Diethyl Phthalate which may contaminate the environment can cause harm to biological systems, by slowing down their mitotic rates, and possibly triggering abnormal growth.