Junior Science Communications
Faculty of Applied Sciences, UiTM Shah Alam
https://journal.uitm.edu.my/ojs/index.php/JSC

E-ISSN 2637-0689
Vol. 33

Colloquium on Applied Sciences 2024
19-21 January 2024, Faculty of Applied Sciences, UiTM Shah Alam, Malaysia

The Cytogenetics Study of Moisturizer Cream using Plant Bioassay

Nazatul Afiza Mokhtar[a], Lyena Watty Zuraine Ahmad[a*]

Structured Abstract

Background: People have acknowledged the importance of applying skincare in their daily routine. However, there are many products that contained harmful substances such as mercury in the ingredients. Moisturizers that contain mercury are dangerous and harmful.

Methods: In this study, the cytotoxicity effects of moisturizer cream on germination percentage, survival percentage, plant height, and root growth height of the plant in *Vigna radiata* were investigated. In addition, *Allium cepa* was investigated to observe the mitotic index and the chromosomal aberration based on the genotoxicity of two local brands of moisturizer which is Skin Dessert and Alluskin Barrier. Both plants were treated with the two selected local brands of moisturizer by exposing the roots to the test solutions with concentrations of 0%, 5%, 10%, and 15% of concentrations for 24 hours and 48 hours. After that, the growth of *Vigna radiata* seeds from all treatments was observed for seven days while the *Allium cepa* roots from all treatments were sampled at the end of the test duration.

Results: The results showed the germination percentages of mung bean seeds after exposure to all concentrations of moisturizer creams for 24 and 48 hours were recorded at 100% as there was no interaction that seemed to trigger the disruption of the germination process. However, the survival rate of mung bean seeds after seven days was seen to reduce as the plant growth stopped to grow as the presence of toxic substances that inhibit the growth of plants. The root length of *Vigna radiata* reduced slightly when concentrations and time of exposure were increased. Furthermore, the cells of *Allium cepa* showed a significant decrease in mitotic index ($p<0.05$) along with a significant increase in the percentage of chromosomal aberration ($p<0.05$) when exposed to higher concentrations of moisturizer cream.

Conclusion: Skin Dessert moisturizer cream has severe effects according to cytogenetics study using plant bioassay.

Keywords: Moisturizer cream, Mercury, Toxic, Mutation

*Correspondence: lyenawatty@uitm.edu.my

[a] School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia