

The cytotoxicity study of slimming coffee using plant bioassay

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Structured Abstract

Background: The consumption of slimming coffee is one of the initiatives that had been taken by people with BMI>25 consumers to reduce their body size. But nowadays, those people with BMI<25 also consumed slimming products to maintain their body mass index. The excessive and overclaimed advertisements attract consumers to buy the products without having any knowledge about the ingredients had exposed consumers to adulterated toxins. Brand KS contains *Garcinia cambogia*, Korean ginseng, L-carnitine, coffee, African mango, and green coffee while brand LS contains tuckahoe, *Griffonia simplicifolia*, and instant coffee. The mitotic index is the method that can be used to measure the degree of cytotoxicity in the products.

Methods: Rooted bulbs of *Allium cepa* were exposed to 0, 5, 10, 15, and 20% w/v of two brands of slimming coffee (Brand KS and LS) for 24 and 48 hours. Roots from each treatment were then placed in 18% HCl, fixed with Carnoy's solution and chloroform (1:1) for 4 minutes respectively. The root cells were stained with 2% toluidine blue for 2 minutes. The squash technique was applied with a slight vertical pressure to spread the cells.

Results: The mitotic index results show no statistically significant differences ($p=0.578$) for 24 hours but statistically significant differences in 48 hours ($p=0.003$). The highest and lowest mean \pm SE of mitotic index for 48 hours is 20% w/v of LS (99.57 ± 0.96) and 5% w/v of KS (88.61 ± 0.96).

Conclusion: The increases in product concentration cause a decrease in the mitotic index. In this study, only 5% w/v in both products for 24 and 48 hours showed significant differences with the control treatment. It can be influenced by several reasons such as the peak time of cell division especially during the root samples were collected. The peak time of cell division is the time active for the cell to divide and the peak time is around 11:00 am to 1:00 pm.

Keywords: *Allium cepa*, slimming coffee, plant bioassay

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