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Cytotoxic evaluation of sodium hypochlorite, using *Pisum sativum* L as effective bioindicator

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Highlights

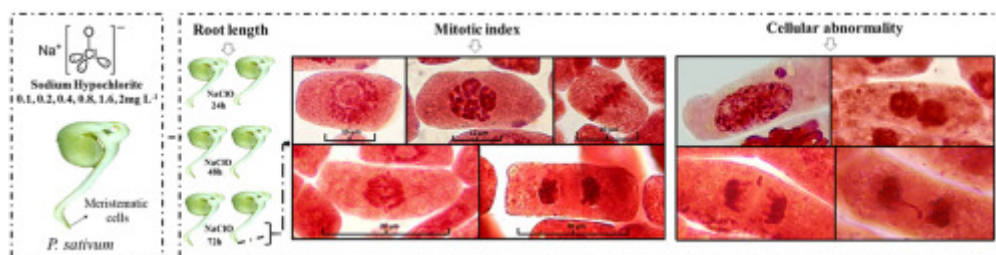
- *P. sativum* is a good model for cytotoxicity studies.
- Sodium hypochlorite induces the formation of chromosomal aberrations.
- The mitotic index decreased with sodium hypochlorite concentration.
- Presence of micronuclei is indicative of a high degree of cytotoxicity.
- Sodium hypochlorite could be classified as a highly cytotoxic substance.

Abstract

FEEDBACK 

The objective of this study was to evaluate the cytotoxic effect of different sodium hypochlorite concentrations, using apical root cells of *P. sativum* as a bioindicator. Initially, the seeds of *P. sativum* were exposed to different concentrations of sodium hypochlorite (0.1, 0.2, 0.4, 0.8, 1.6, 2 mgL⁻¹) and to a control solution based on distilled water. Next, root growth was measured during 24, 48 and 72 h. Subsequently, the mitotic index (MI) and cellular anomalies (5000 cells per treatment) were determined at 72 h. According to the results obtained, a decrease in root growth was observed at concentrations of 0.4, 1.6 and 2 mgL⁻¹. Likewise, it was evident that, among all the evaluated concentrations, an inhibition of mitosis higher than 50% was presented. Additionally, chromosomal anomalies were also generated, such as Nuclear notch, lagging chromosomes and Chromosomal break, which were present in all the concentrations evaluated. In addition, the presence of micronuclei at concentrations of 2.0 and 1.6 mgL⁻¹ indicate that sodium hypochlorite is a highly cytotoxic substance. Therefore, *P. sativum* is a specie that offers a feasible experimental model to be implemented in the laboratory with the aim to evaluate the cytotoxic effect of any cytotoxic substance.

Graphical abstract



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Keywords

Cellular abnormalities; Cytotoxicity; Sodium hypochlorite; Mitotic index; *P. sativum*

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FEEDBACK



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