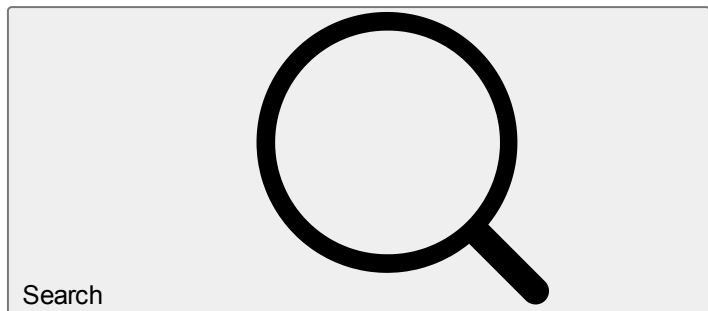



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## Use of *Lens culinaris* Med test as environmental bioindicator to identify the cytogenotoxic effect of paraquat pesticide

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### Abstract

Paraquat is the most widely used herbicide and the third most sold pesticide in the world, applied in more than 120 countries despite being banned in the European Union. It is a risk to ecosystems. The genotoxic effect of paraquat was evaluated using the *Lens culinaris* test. *L. culinaris* seeds were subjected to 6 concentrations of paraquat (0.1, 0.5, 1, 1.5, 1.5, 2, and 3 ppm) plus a control (distilled water). During 72 h, root development was measured every 24 h. After 3 days, root apices were analyzed to obtain the inhibition of the mitotic index, as well as the type and rate of chromosomal abnormalities present. A decrease in root growth of more than 50% (72 h of exposure) and an inhibition of the mitotic index of 2.9 times in the treatment with 3 ppm compared to the control were observed. The 2 ppm concentration presented all the anomalies found with a frequency of  $84 \pm 2.5$  of micronuclei,  $106 \pm 3.5$  of nuclear lesions,  $14 \pm 4.7$  of nucleus absence,  $8 \pm 2.7$  of telophase bridges,  $7 \pm 2.7$  of binucleated cells, among others. It is also recommended to establish comparisons of *L. culinaris* with multiple biomarkers since it is presented as a practical and economic alternative.

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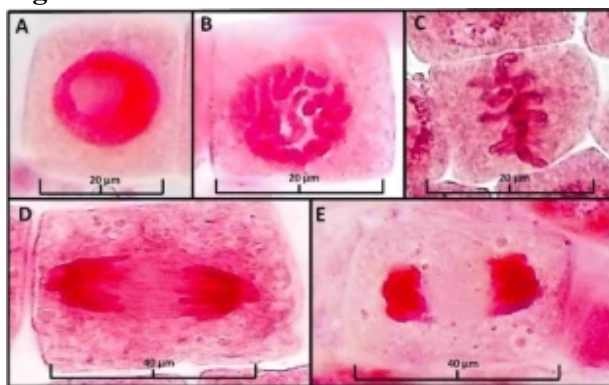
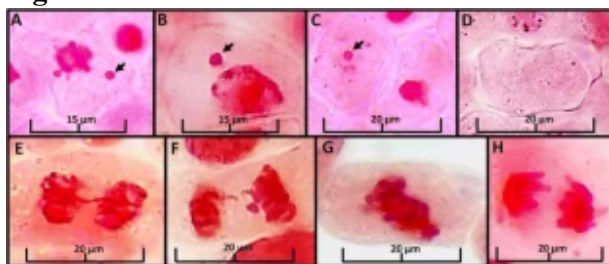
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## Availability of data and materials

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

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## Contributions

Seir Antonio Salazar Mercado: methodology, writing, original draft preparation. Jesús David Quintero Caleño: supervision, conceptualization, investigation and data curation.

## Corresponding author

Correspondence to [Seir Antonio Salazar Mercado](#) .

## Ethics declarations

### Ethical approval

This section is “not applicable” for this study as the study does not involve any human participants nor their data or biological material.

### Consent to participate

Written informed consent was obtained from individual or guardian participants.

### Consent to publish

This section is “not applicable” for this study as the manuscript did not include any data from individuals.

### Competing interests

The authors declare no competing interests.

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## Keywords

- *Lens culinaris*
- Chromosomes
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