CYTOLOGICAL EFFECTS OF THE INSECTICIDE CARBOFURAN ON VICIA FABA AND ZEA MAYS PLANTS

Thesis Submitted for

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(Gentics and Cytology)

By

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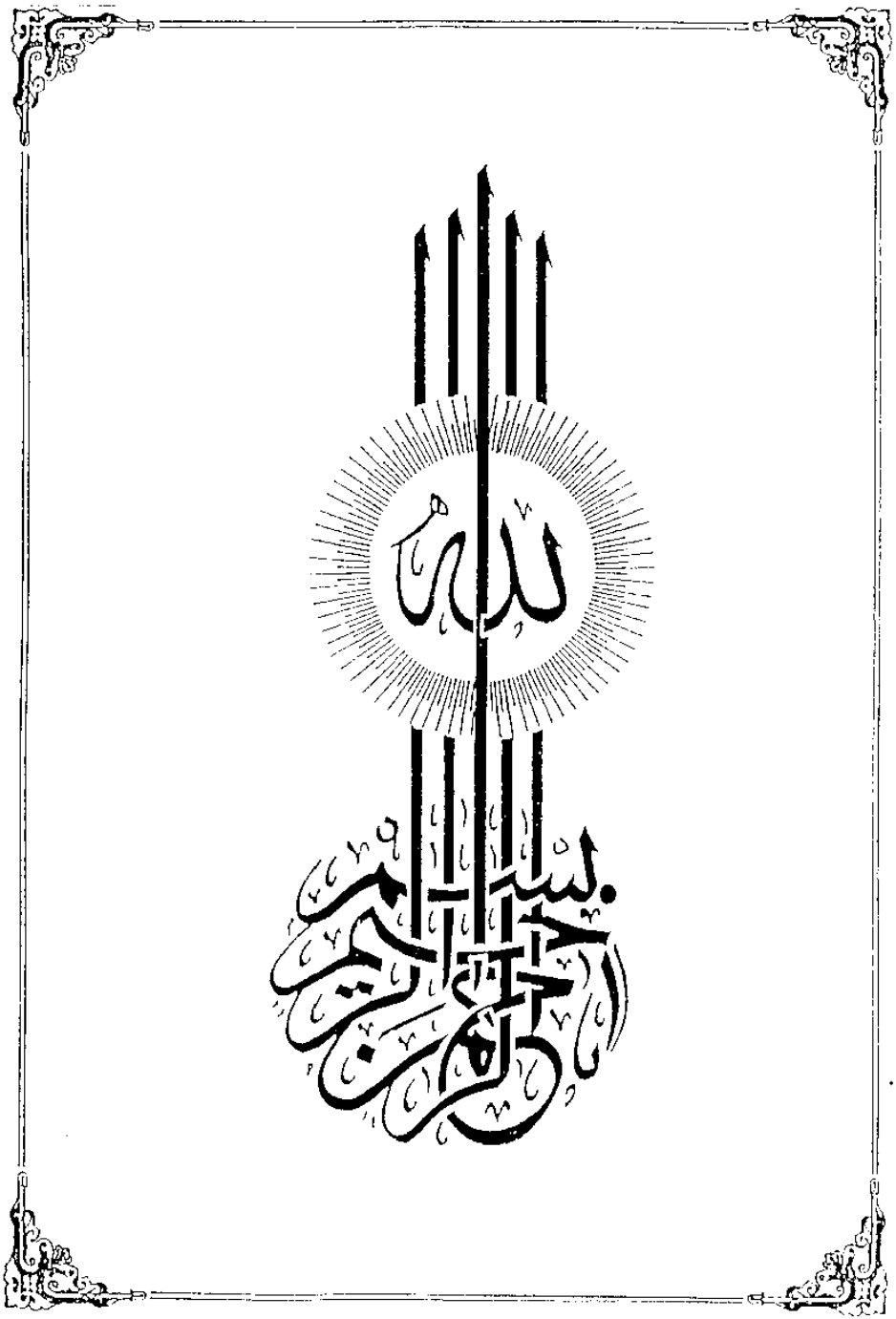

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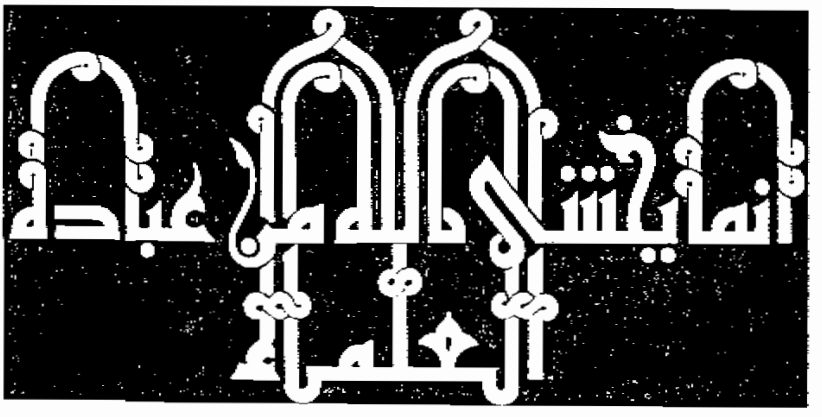

صدق الله العظيم

Approval Sheet

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This has been approved by :

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ABSTRACT

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Nagwa Riad Abd El-Hamied. Cytological effect of the insecticide carbofuran on Vicia faba and Zea mays plants. M.Sc. Botany Department, University College for Girls, Ain Shams University.

The main object of this study is to investigate the cytotoxic effect of carbofuran on both mitotic and meiotic cells and pollen grains viability. Carbofuran is a well known carbamate pesticide with insecticidal, acricidal and nematicidal properties and used to almost all plant fields for the control of many pests which attack economic plants.

Mitotic study revealed that : by increasing concentration, and prolonged times of treatments even after recovery for 24 and 48 hrs, mitotic index, mitotic stage index, frequency of prophase and metaphase decreased. Meanwhile frequency of anātelophases and total mitotic aberrations increased.

In Vicia faba induced abnormalities were stickiness, laggard, fragmentation and despiralization, while in Zea mays stickiness and bridge are the only types of induced abnormalities.

Meiotic study revealed that : percentage of total abnormalities in PMCs increased as concentration of carbofuran increased and its value increased in the 1st meiotic than that in the 2nd meiotic division in both plants.

The observed abnormal PMCs are stickiness, lagging chromosomes, chromosome bridges and micro nuclei in both plants, disturbed anaphases observed only in Zea mays.

Pollen grains study revealed that : by increasing concentration, the viability of pollen grains decreased in both Vicia faba and Zea mays plants.

From the meiotic results it is clear that Vicia faba is more sensitive than Zea mays, since the percentage of total abnormal PMCs and non viable pollen grains were higher in Vicia faba.

Thus the insecticide carbofuran used in this study proved to be mutagenic, clastogenic as well as turbagenic agent.

Key words :

Pesticide.
Carbamate.
Carbofuran.
Vicia faba.
Zea mays.
Cytology.
mitosis.
meiosis.

Content