

ABSTRACT

MSc Thesis

EFFECTS OF DICHLORVOS (DDVP) ON MITOSIS AND CHROMOSOMES IN *ALLIUM CEPA* L. ROOT TIP MERISTEM CELLS

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Aydın, located in Büyük Menderes Basin which is one of the important agricultural areas in our country, is actively used for agricultural purposes. Average usage of pesticide amount in Aydın and Egean region is higher than Turkey average. One of the pesticide used is insecticide Dichlorvos (DDVP). In our research our aim is to determine the genotoxic activities of DDVP. Allium test, one of the plant test system, is used to determine genotoxic effects.

In our study, effects of DDVP on *Allium cepa* root length, root number, mitosis and chromosomes are determined. Different doses of DDVP (2 ml/L, 4 ml/L, 6 ml/L) were applied to *Allium cepa* roots with three different application periods (12h, 24h and 48h). Roots of tubers were counted and root lengths were measured after applications. Our results show that root numbers of application groups are decreased correlated with application time. When root length of application groups with control group is compared, root length decrease is generally seems to be correlated with application dosage and time. The data of microscobical observations were put in tables and evaluated with statistical analysis using SPSS 12.0. DDVP is determined to have a decreasing effect on mitotic index of *Allium cepa*. Decrease of mitotic index is correlated with increase of application time but not correlated with increase in application dosage. Chromosome aberrations were occurred in *Allium cepa* roots, after application of insecticide. Most observed chromosome defects are stickiness, pole deviation and fragmentation. Anaphase bridges and micronuclei are also observed.

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Keywords

Pesticide, Insecticide, Genotoxic effect, Mitotic index, Chromosome aberrations