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CYCLOPHOSPHAMIDE AND URETHANE IN THE WING SOMATIC  
MUTATION AND RECOMBINATION TEST USING *DROSOPHILA*  
*MELANOGASTER* OF LAC AND GARDENIA COLORS. THESIS ADVISORS :  
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The main aim of this study was to determine whether the *in vivo* induction of mutation and mitotic recombination in somatic cells of *Drosophila melanogaster* by chemical mutagens could be modulated by natural colorants, namely, lac color and gardenia color. Larvae *trans*-heterozygous (3 days old) for the wing cell markers *mwh* (multiple wing hairs) and *flr*<sup>3</sup> (flare wing hair) were fed on medium containing a standard genotoxin (cyclophosphamide or urethane) or the combination of each toxin and each color until pupation. Subsequently, the wings of the resulting adult flies were analyzed for the frequencies and size of single and twin spots. The results suggest that lac color is more toxic to larva than gardenia color. Lac color (0.22 to 44 mg/tube) and gardenia color (10 to 200 mg/tube) did not induce mutant spots. Simultaneous administration of lac color (0.22, 2.20 and 22.00 mg/tube) or gardenia color (10, 50, 100 and 150 mg/tube) with cyclophosphamide (2.79 mg/tube) or urethane (1.78 mg/tube) to the tester flies modulated percent survival compared with that of the standard mutagen groups. Co-administration of lac color (0.22 or 2.20 mg/tube) with cyclophosphamide (2.79 mg/tube) induced the frequencies of small single spots while the frequencies of total spots were not different from those of the control cyclophosphamide treated group. It is interesting that lac color (0.22 and 2.20 mg/tube) potentiated the frequencies of total spots induced by urethane. Gardenia color (10 or 50 mg/tube) simultaneously administered with cyclophosphamide or urethane to the larva decreased the frequencies of total wing spots while the higher concentrations (100 mg/tube) could not produce such significant effect.