The Color Vision of Drosophila melanogaster

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In the experiment, the relationship between the pteridine eye pigments of the drosophila melanogaster (fruit flies), including wild type, sepia type, white type and brown type and their responsiveness to red, blue and white light is tested. The thin layer chromatography is used to separate the pteridine pigments and the Rf values is used to distinguish the types and numbers of the pteridine pigments of the wild, sepia, white and brown type drosophilas. I used the concentration and types of the pteridine pigments in the wild type as the standard group. The brown and white type did not manifest any of the pteridine pigments within the wild type. However, the sepia type exhibited several variations in the types and concentrations of pteridine pigments compared to the pteridine pigments in the wild type drosophilas. I have also done the experiment on the behavioral responses of the different eye mutants to the red, blue and white light. Twenty drosophilas of each genotype were put in test tubes. As each test tubes was divided into three sections, the time when the section closest to the light source contained the most drosophilas and the percentage of drosophilas in the section was considered the main factors to indicate the readiness of the drosophilas in response to the various wavelengths. Furthermore, I have used the chi-square test to analyze the data of the specific types of pteridine pigments contained in each genotype in relation to their responsiveness to the three types of wavelengths. The correlation between the eye pigments in each genotype and their responses to different light colors is found. In accordance with the data processed by the chi-square test, pteridine pigments contained in the mutants of drosophilas do influence their color perception.

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