

Effect of Diazepam on Internal Organs of *Chrysomya megacephala* Using Micro-Computed Tomograph

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Abstract : Diazepam (known as valium) is a medication for calming effect. Many reports on committed suicide cases shown that diazepam is frequently used for this purpose. This research aims to study effect of diazepam on the development of forensically important blowflies, *Chrysomya megacephala* (Diptera: Calliphoridae) using micro-computed tomography (micro CT). In this study, four rabbits were treated with three different lethal doses of diazepam and one control (LD₀, LD₅₀, LD₁₀₀ and LC). The rabbit's livers were removed for rearing the blowflies. Pupae were sampled for two series (ages; S1: 24h and S2: 120h) of development. After preparing the specimens, all samples were performed Micro CT using Skyscan 1172. The results shown the effect of diazepam on internal organs and tissues such as brain, cavity of the body, gas bubble, meconium and especially fat body. In the control group, in series 1 (LCS1), fat body was equally dispersed in the head, thorax, and abdomen, development of internal organs were not completed, however, brain, thoracic muscle, wings, legs and rectum were able to observe at 24h after developing into the pupal stage. Development of each organ in the control group in the series two was completed. In the treatment groups, LD₀, LD₅₀, LD₁₀₀ (Series 1 and Series 2), tissues are different, such as gas bubble in LD₀S1, was observed due to rapidity morphological changes during the metamorphosis of blowfly's pupa in this treatment. Meconium was observed in LD₅₀S2 group because excretion of metabolic waste was not completed. All of the samples in the treatment groups had differentiation of fat bodies because metabolic activities were not completed and these changes affected on functions of every internal system. Discovering of differentiated fat bodies are important results because fat bodies of insect functions as liver in human, therefore it is shown that toxin eliminates from blowfly's body and homeostatic maintenance of the hemolymph proteins, lipid and carbohydrates in each treatment group are abnormal.

Keywords : forensic toxicology, forensic entomology, diptera, diazepam

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