ABSTRACT

This research was conducted to design a detection system of mouse skin tissue damages (*mus musculus*) due to Nd:YAG laser exposure with the density energy ranging from 18.8 to 53.8 J/cm² from digital microscope images. Skin tissue damages due to the exposure of Nd:YAG laser is in the form of hemorrhage (bleeding) and holes. The image samples used in this study were the images of normal tissue and those of damaged tissue. The design of the system utilizes Delphi programming with color feature extraction method and color segmentation. There were three features used in this study such as normal tissue, hemorrhage (bleeding), and hole features. The color feature extraction method was performed by using histogram to figure out the intensity with the highest frequency accurately. The test results on the program showed that 25 images out of 40 images that were used had been successfully identified so that the accuracy rate of the program is 62.5%, while the test result of the diameter of hole measurement program showed that the accuracy was ranging from 38.84% to 68.14%.

Keywords: Nd:YAG Laser, Feature Extraction, Color Segmentation, Delphi