

Determination of Vascular Contrast of Hemoglobin with Gold Nano-particles Using Near Infra Red

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Abstract

Introduction: Early detection and treatment of breast cancer may be helping to save of the lives of patients. Many new techniques have been urban to detect breast cancer. One of them is the use of nano-particles for accuracy and early diagnosis after photo transfer. In this study, we used gold nanoparticles which can change light source transfer intensity.

Material and Methods: Spherical gold nano particles and four types of bloods with 0,1, 2, 4 hemoglobin concentrations used for simulating of breast cancerous conditions. Nanoparticles with each concentrations of hemoglobin injected into the breast phantom including vessels and transmitted light intensity measured by power meter. Light source was near infra red At 635 wavelength.

Results: The intensity of the passing lights from hemoglobin concentrations of 0, 1, 2, and 4 were 9.31mw, 4.73mw, 3.36mw and 2.86mw, respectively in without nano particle condition. When the nano-particles were blended with hemoglobin concentrations of 0, 1, 2, and 4, the intensity of the passing light were 7.43mw, 3.62mw, 2.29mw and 2.02mw, respectively.

Conclusions: This study showed that addition of Spherical gold nano-particles to different concentration of hemoglobin provides a effective decline on the light transferring intensity.