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JIRAPORN KIEWTEANG: LASER-INDUCED FLUORESCENCE SPECTRUM OF NORMAL AND CANCER BREAST TISSUES. THESIS ADVISERS: KWAN ARAYATHANITKUL, Ph.D., SANSANEE WONGWAISAYAWAN, M.D., SUNANTA CHARİYALERTSAK, M.Sc., 54 P. ISBN 974-665-096-3

In this study, fluorescence spectra were used to distinguish normal and cancer breast tissues. Two different techniques were used to measure the fluorescence spectra. The first, the arc lamp-induced fluorescence spectra were obtained from cancer and normal breast tissues using commercial fluorescence spectrometer. The second, the laser-induced fluorescence spectra were obtained by the second harmonic of 90 nanosecond pulse from Nd:YAG laser.

The spectral profiles from the cancer and normal breast tissues from the first method were the same, whereas the spectral profiles from the second method were substantially different. We used the difference of fluorescence intensity in wavelength range 630-690 nm to distinguish the spectra from both tissues. This difference is attributed to the native porphyrins fluorophors. The result shows the needs for a laser-induced method in order to distinguish the spectra from cancer and normal breast tissues. The statistics of the fluorescence results are given. The results were found to indicate cancer tissue with 85 % of confident level. Further clinical studies will make this method a diagnostic tool for breast cancer as well as other diseases.