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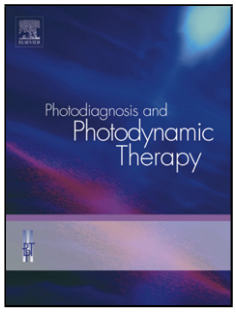

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Author: Irfan Ullah Iftikhar Ahmad Hasan Nisar Saranjam Khan Rahat Ullah Rashad Rashid Hassan Mahmood

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Computer Assisted Optical Screening of Human Ovarian Cancer using Raman Spectroscopy

Irfan Ullah[1], Iftikhar Ahmad[1,], Hasan Nisar [1], Saranjam Khan[2], Rahat Ullah[2], Rashad Rashid[2], Hassan Mahmood[3]*

[1]Pakistan Institute of Engineering and Applied Science (PIEAS), Nilore 45650, Islamabad, Pakistan

[2]National Institute of Lasers and Optronics (NILOP), Nilore 45650, Islamabad, Pakistan

[3]Citi lab, Islamabad, Pakistan

*Corresponding Author: iahmadmp@gmail.com

Highlights

- Raman spectra from the blood serum of healthy control and ovarian cancer subjects were measured.
- Highly significant Raman shifts ($p<0.0001$) and intensity variations were observed in the cancer group as compared to the healthy group.
- The spectral differences were exploited by support vector machine classifier towards computer assisted classification.
- Calculated evaluation metrics such as sensitivity (=90), specificity (=100), positive predictive value (=100) and negative predictive value (=87.5) for such classification indicated that these results are promising.

Abstract

Conventional screening tools for ovarian cancer such as cancer antigen (CA-125) and trans-pelvic ultrasound have poor sensitivity and specificity, indicating the need for better and more reliable screening methodologies. Here, we investigate the capability of Raman spectroscopy as a screening technique for ovarian cancer. Raman spectra from the blood serum of healthy control and ovarian cancer subjects were measured. Highly significant Raman shifts ($p<0.0001$) and intensity variations were observed in the cancer group as compared to the healthy group. These spectral differences were exploited by support vector machine classifier towards computer assisted classification. Calculated evaluation metrics such as sensitivity (=90), specificity (=100), positive predictive value (=100) and negative predictive value (=87.5) for such classification

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