Abstract Submitted for the MAR12 Meeting of The American Physical Society

Sorting Category: 19.1.4 (E)

Comparison of Raman Spectral Features Frozen and Deparaffinized Tissues in Neuroblastoma and Ganglioneuroma¹ SUNEETHA DEVPURA, JAGDISH S. THAKUR, Wayne State University, JANET M. POULIK, Children's Hospital of Michigan, RAJA RABAH, University of Michigan-Ann Arbor, VAMAN M. NAIK, University of Michigan-Dearborn, RATNA NAIK, Wayne State University — We have investigated the cellular regions in neuroblastoma and ganglioneuroma using Raman spectroscopy and compared their spectral characteristics with those of normal adrenal gland. Thin sections from both frozen and deparaffinized tissues, obtained from the same tissue specimen, were studied in conjunction with the pathological examination of the tissues. We found a significant difference in the spectral features of frozen sections of normal adrenal gland, neuroblastoma, and ganglioneuroma when compared to deparaffinized tissues. The quantitative analysis of the Raman data using chemometric methods of principal component analysis and discriminant function analysis obtained from the frozen tissues show a sensitivity and specificity of 100% each. The biochemical identification based on the spectral differences shows that the normal adrenal gland tissues have higher levels of carotenoids, lipids, and cholesterol compared to the neuroblastoma and ganglioneuroma frozen tissues. However, deparaffinized tissues show complete removal of these biochemicals in adrenal tissues. This study demonstrates that Raman spectroscopy combined with chemometric methods can successfully distinguish neuroblastoma and ganglioneuroma at cellular level.

Prefer Wal Session Interdisciplinary Research

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Date submitted: 28 Jan 2012 Electronic form version 1.4