

## LASER INDUCED BREAKDOWN SPECTROSCOPY FOR DETECTION OF HEAVY METALS IN CANCEROUS AND HEALTHY COLON TISSUES

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Cancer mortalities are common due to the lack of diagnostic at the early stages in many countries. Recent studies discovered that the heavy metals in the human colon could cause the colon cancer. The conventional cancer detection techniques suffer from the insensitiveness, imprecision, slowness, cumbersomeness of sample preparation, and some time show conflicting results. Hence an accurate, reliable, and rapid detection technique is essential for the early diagnostic and prevention of heavy metals accumulation induced colon cancers. In this work, calibration-free laser-induced breakdown spectrometer (LIBS) was applied on several cancerous and normal colon tissues collected from the colon cancer infested patients aged 40 — 60 years. The results showed the presence of carcinogenic heavy metals including lead (Pb), chromium (Cr), and mercury (Hg) in the malignant colon tissues, while the healthy tissues were devoid of these elements. The accuracy of the LIBS results was validated by comparing the results obtained using a standard inductively coupled plasma atomic emission spectroscopy (ICP-OES). This study demonstrated that LIBS technique is very effective for rapid, precise early detection of the heavy metals accumulation in malignant colon tissues.