Mucin MUC13 and YAP1 correlate with poor survival in colorectal cancer

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Background: Metastatic disease contributes to over 90% of cancer-associated deaths. Colorectal cancer (CRC), the second lethal malignancy, has the greatest incidence and mortality rates in the Southern United States. Over 40-50% of CRC patients acquire metastasis at some point throughout their disease's progression. CRC survival rate drops from 90%-14% when the disease is confined within the colon and therefore "early diagnosis" becomes imperative to determine timely and quality treatments. We have identified that MUC13 protein translocate to nucleus along with transcription factor Yes-Associated Protein 1 (YAP1) during anchorage independent conditions (metastatic phenotype). YAP1 is known to be overexpressed in CRC which promotes proliferation and survival of CRC cells. This study will provide information regarding MUC13 and YAP1 correlation and their role in CRC patient outcomes.

Methods: The comparative analysis of MUC13 and YAP1 expression in CRC samples (Tissue Microarrays (TMA) of CRC patients (39 cases and 95 cores)) with Pathology grade, TNM Classification, Clinical stage, and Survival information were investigated using Immunohistochemistry (IHC) staining, followed by digital scanning by 3D-Histech scanner, and analysis using QuantCenter image analysis software.

Results: IHC analysis revealed increased MUC13 expression in colon adenocarcinoma and metastatic adenocarcinoma compared to normal colon tissues. MUC13 expression was observed in nucleus, cytoplasm and membrane associated with mostly with poorly differentiated adenocarcinomas, while YAP1 was localized in the nucleus. The correlation of MUC13/YAP1 expression with patient outcome is in progress.

Conclusion: This study will potentially establish a correlation between MUC13 and YAP1 with CRC patient outcome.

Keywords: Colorectal cancer, Tissue Micro-Array, Immunohistochemistry, MUC13, YAP1.