Collagen induced activation of MMPs in CAOV-4 cell lines in vitro

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Metastatic dissemination of epithelial ovarian carcinoma is thought to be mediated via tumor cell exfoliation into the peritoneal cavity, followed adhesion to and invasion through the mesothelium which overlies the contents of the peritoneal cavity. MMP-2 is secreted as a zymogen, the activation of which has been associated with metastatic progression in human ovarian cancer cell lines.

In this study, we have utilized short-term cultures to analyze the effect of specific extracellular matrix proteins, type I collagen. Culturing Caov-3 ovarian cell line on type I collagen led to a significant increase in conversion of the MMP-2,72kD to the MMP-2,66kD, and MT-MMP expression. MT-MMP expression correlates with expression and activation of MMP-2 during malignant progression. Altered MT-MMP expression in ovarian cell lines might contribute to MMP-2 activation, which facilitates invasion of these tumors.

In summary, we found increased expression of MT-MMP that correlated with increased level of activated MMP-2 and cellular counts in chemo-invasion assay in Caov-3 cell line. But no significant increases in Skov-4 cell line on type I collagen. These data suggest that type I collagen induces MMP-2 activation in part by up-regulation of MT-MMP expression but has a more complicated mode of action involving additional processes.