IN VITRO PROPERTIES OF COLLAGEN DEGRADATION OF A HUMAN PANCREATIC CANCER CELL LINE METASTATIC IN NUDE MICE.

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A human pancreatic cancer cell line, SUIT-2, was previously shown to exhibit a high incidence of experimental and spontaneous lung metastasis in the nude mouse [Taniguchi, S., and et al. Clin. Exp. Metastasis, 10: 259-266, 1992].

As a part of the characterization, we investigated their collagen degradation and the expressions of matrix metalloproteinases (MMPs). SUIT-2 cells exhibited much stronger activity of both type I and type IV collagen degradation than the other 16 human cell lines. In cell lines other than SUIT-2 cells, we were barely able to detect either type I or type IV collagenolytic activity. SUIT-2 cells expressed extremely strong levels of MMP-1 (interstitial collagenase). SUIT-2 cells also secreted strong levels of MMP-2 (gelatinase A) and MMP-3 (stromelysin-1), which degrade type IV collagen. The MMP-2 and MMP-3 existed mainly in activated forms in the serum-free conditioned medium (SFCM) of SUIT-2 cells.

The SFCM of NIH-3T3 fibroblasts (SFCM/3T3) caused SUIT-2 cells to express elevated levels of MMP-1. This effect was observed within 3 days after seeding the cancer cells. Functional assays and immunoblotting showed that the SFCM/3T3 increased MMP-1 in the SFCM of SUIT-2 cells 2-3-fold. Northern-blot hybridization disclosed that the SFCM/3T3 elevated steady-state mRNA levels for MMP-1 ~6-fold but it did not affect mRNA for MMP-3. These data suggest that the SFCM/3T3 contains a MMP-1-stimulatory factor(s) and that the factor exerts its effects transcriptionally through a pathway(s) different from MMP-3 regulation.