STUDY OF MECHANISM OF INTERACTION BETWEEN GASTRIC CANCER CELLS AND FIBROBLASTS IN INCREASING METALLOPROTEINASE PRODUCTION

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The interaction between cancer cells and host cells may be important in regulating metalloproteinase production in cancer tissues.

To study the mechanism of interaction between cells, we performed cell cultures with gastric cancer cell lines and fibroblast cell lines.

MATERIALS AND METHODS

Two gastric cancer cell lines (MKN-7: tubular adenocarcinoma and MKN-45: poorly differentiated adenocarcinoma) and three fibroblast cell lines within two cell lines established by ourselves were used for this study. Mixed culture with cancer cells and fibroblasts and individual culture of each type of cancer cell and fibroblast were done. Fibroblasts were treated with medium from cancer cells and cancer cell extracts. The harvested media were used as a sample. The kinetics of enzyme production were visualized on SDS–polyacrylamide gel containing gelatin (Zymography¹)). The Mw of stimulating factors from cancer cells was analyzed with gel-HPLC.

RESULTS AND DISCUSSION

Metalloproteinase production was increased with both mixed cultures compared with those from fibroblasts without stimulation (Fig. 1).

In the case of MKN-7, medium from this cell line and this cell extract stimulated fibroblasts, and enzyme production from fibroblasts was increased. However, in the case of MKN-45, this cell extract only could be stimulated (Fig. 2). Much more of these 45 and 50 kDa enzymes was produced in all cases.
Effect of cell to cell interaction on MPs productions

These results indicated with regard to the mechanism of interaction between cancer cells and fibroblasts that the MKN-7 cell line stimulated fibroblasts with a soluble factor and direct attachment to fibroblasts and MKN-45 cell line stimulated with direct attachment only to increase enzyme production. The Mw of stimulating factor from MKN-7 was about 17 kDa and this factor was different from that produced by MKN-45. It was suggested that the factor from MKN-7 might be one of the cytokines.

Fig. 1  Kinetics of enzyme production patterns in mixed culture with cancer cells and fibroblasts

Fig. 2  Enzyme patterns produced by fibroblasts treated with medium from cancer cells and cancer cell extract

REFERENCE