

Bacillus pumilus Ribonuclease Inhibits Migration of Human Duodenum Adenocarcinoma HuTu 80 Cells

Zelenikhin P.V., Ead Mohamed I.S., Nadyrova A.I., Sirotkina A.A., Ulyanova V.V., Mironova N.L., Mitkevich V.A., Makarov A.A., Zenkova M.A., Ilinskaya O.N.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Migration of cancer cells from the primary tumor site to nearby tissues is the starting point of the metastatic process. The invasive properties of cells are especially important for carcinomas, since tumor cells need to overcome the basement membrane and go beyond its boundaries to the underlying tissues. Substances that reduce the invasive ability of malignant cells are promising as antimetastatic agents. In the present work, the possibility of inhibiting the ability of different cancer cell lines to migrate under the influence of the *Bacillus pumilus* ribonuclease (binase) was analyzed using the scratch-wound assay. It was established that binase at non-toxic concentrations (10 µg/mL) reliably suppressed the migratory ability of HuTu 80 human duodenum adenocarcinoma cells incubated with RNase for 48-72 h. The antimetastatic potential of binase is confirmed by molecular modeling data demonstrating the ability of binase to inhibit cellular metalloproteinases that determine the migration of tumor cells.

<http://dx.doi.org/10.31857/S0026898420010176>

Keywords

ADAM metalloproteinases, binase, carcinoma, invasion, melanoma, RAS oncogene, ribonuclease