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## BACTERIAL RIBONUCLEASE BINASE AS AN ANTIVIRAL AGENT

Raihan Shah Mahmud<sup>1</sup>, Vera Ulyanova<sup>1</sup>, Marina Efimova<sup>2</sup>, Ahmed Mostafa<sup>3,4</sup>, Anna Shtro<sup>5</sup>, Christin Müller<sup>3</sup>, Olga Ilinskaya<sup>1</sup>

<sup>1</sup>*Institute of Fundamental Medicine and Biology, Kazan Federal University, Kazan, Russia*

<sup>2</sup>*Federal Center for Toxicological, Radiation and Biological Safety, Kazan, Russia*

<sup>3</sup>*Institute of Medical Virology, Justus Liebig University, Giessen, Germany*

<sup>4</sup>*Center of Scientific Excellence for Influenza Viruses, National Research Centre, Cairo, Egypt*

<sup>5</sup>*Laboratory of Antiviral Chemotherapy, Influenza Research Institute, Saint-Petersburg, Russia*

Ribonucleases (RNases) of different origin demonstrate an antiviral effect and are regarded as potential antiviral drugs. The antiviral potential of bacterial guanyl-preferring ribonuclease (binase) secreted by *Bacillus pumilus* was tested against RNA-containing Influenza A viruses, corona viruses, Rhinovirus, Reovirus and DNA-containing herpes virus. The antiviral activity of binase was demonstrated during both single and multicycle replication of viruses with the multiplicity of infections 0.01-3.0 in several infected human and animal cell lines and laboratory mouse models. It was found that the antiviral efficiency of mammalian pancreatic RNase was less than that of binase. Binase at low concentrations (below 400 µg/mL) did not show cytotoxic effect towards human and animals cells. Binase internalized into mammalian cells exerts antiviral effect against RNA-containing influenza A, rhino-, reo-, corona viruses at binase concentrations 10-100 µg/mL. Interestingly, binase affects also DNA-containing herpes virus by decreasing the virus titer by 29%. Binase antiviral efficiency against single-stranded RNA virus was two-times higher than against double-stranded RNA virus and three-times higher than against DNA virus. Irrespective of binase pre-incubation with cells or viruses, the enzyme always shows antiviral activity decreasing the virus titer by 50-99.7%.

Thus, our results suggest that binase could be useful as an antiviral drug for the prevention and treatment of viral infections at the moment or before the epidemic and pandemic outbreaks.

**Keywords:** bacterial ribonuclease, binase, antiviral agents.

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