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Ribonucleolytic activity of mycoplasmas

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Abstract

Mycoplasmas are incapable of de novo synthesis of nucleotides and must therefore secrete nucleases in order to replenish the pool of nucleic acid precursors. The nucleolytic activity of mycoplasmas is an important factor in their pathogenicity. Bacterial ribonucleases (RNases) may produce a broad spectrum of biological effects, including antiviral and antitumor activity. Mycoplasma RNases are therefore of interest. In the present work, the capacity of *Acholeplasma laidlawii* and *Mycoplasma hominis* for RNase synthesis and secretion was studied. During the stationary growth phase, these organisms were found to synthesize Mg²⁺-dependent RNases, with their highest activity detected outside the cells. Localization of *A. laidlawii* RNases was determined: almost 90% of the RNase activity was found to be associated with the membrane vesicles. Bioinformational analysis revealed homology between the nucleotide sequences of 14 *Bacillus subtilis* genes encoding the products with RNase activity and the genes of the mycoplasmas under study. Amino acid sequences of 4 *A. laidlawii* proteins with ribonuclease activity and the Bsn RNase were also established. © 2014 Pleiades Publishing, Ltd.

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Keywords

Acholeplasma laidlawii, localization, *Mycoplasma hominis*, mycoplasmas, ribonuclease activity, vesicles