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Mycoplasma meleagridis surface protein endowed with an endonuclease activity related to the restriction enzymes of the RE_*AlwI* superfamily

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In this study, we report on the identification and the characterization of a Mycoplasma meleagridis surface protein associated with an endonuclease activity. Unlike Mycoplasma gallisepticum and Mycoplasma synoviae, whose surface proteins have been extensively studied, Mycoplasma meleagridis has not yet focused much interest. Seen from this aspect and in an attempt to address this deficiency, we screened a λ phage expression library of *M. meleagridis* genomic fragments with an anti-*M. melagridis* serum that had been depleted of antibodies to the cytosolic fraction. A strongly reactive clone was isolated and found to harbor a 1779-nucleotide partial coding sequence, termed Mm19, which specified a 392-amino acid polypeptide, predicted to be surface exposed. BLASTP search analysis revealed a significant match with the catalytic/dimerization domain of type II restriction enzymes of the RE_AlwI superfamily. The E. coli-expressed glutathione sulfotransferase fusion of Mm19 (GST-Mm19) exhibited nuclease activities against plasmid DNA, double stranded DNA, single stranded DNA, and RNA. Like most of type II restriction enzymes, Mm19-associated nuclease activity was enhanced with Mg2+. Likewise, M. meleagridis intact cells exhibited an Mg2+enhanced DNase and RNase activities similar to that of GST-Mm19. An antiserum produced against GST-Mm19 predominantly reacted with a 38 kDa protein doublet and confirmed the surface location of Mm19 encoded product. This antiserum completely neutralized the M. meleagridis-associated nuclease activity. Furthermore, in DNA-impregnated SDS-PAGE, the nuclease activity of *M. meleagridis* total cell lysates coincided with the 38 kDa protein doublet. Collectively, the results show that the bulk of *M.* meleagridis surface-bound nuclease activity is encoded by a gene sequence related to the RE_AlwI superfamily of restriction endonucleases.

Biography

Boutheina Ben Abdelmoumen Mardassi is a Doctor in Veterinary Medicine from Tunisia. She has completed her Ph.D. at 34 years from Biotechnology Research Institute at Montreal /Montreal University and postdoctoral studies from Armand-Frappier Institute at Montreal. She is the head of mycoplasmas laboratory at Pasteur Institute of Tunis. She has published 13 papers in reputed journals.

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