

GENES DA *CHROMOBACTERIUM VIOLACEUM* COM POTENCIAL INSETICIDA E FUNGICIDA: UMA ANÁLISE *IN SILICO*.

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Chromobacterium violaceum is a Gram-negative, β -proteobacterium which dominates a variety of ecosystems in tropical and subtropical regions. This bacterium produces a pigment, called violacein, which exhibits antimicrobial activity against the important tropical pathogens *Mycobacterium tuberculosis*, *Trypanosoma cruzi*, and *Leishmania* sp. and it has been found to have other bactericidal, antiviral, and anticancer activities. Other aspects of the biotechnological potential of *C. violaceum* include the synthesis of poly(3-hydroxyvaleric acid) homopolyester and other short-chain polyhydroxyalkanoates, which might represent alternatives to plastics derived from petrochemicals, the hydrolysis of plastic films, and the solubilization of gold through a mercury-free process, thereby avoiding environmental contamination. To provide further insights into the abundant potential of this organism for biotechnological and pharmaceutical applications, the complete genome sequence of *C. violaceum* type strain ATCC 12472 has been determined by the Brazilian National Genome Project Consortium (www.brgene.incc.br/cviolaceum/). The analysis of the *C. violaceum* genome has provided important clues about its physiological adaptation to tropical soils and aquatic habitats as well as its capacities as an opportunistic pathogen. The sequence data and annotation has also revealed that this bacterium might be an important potential source of biotechnologically exploitable genes. Of agricultural interest are several genes encoding chitinases which are potential biocontrol agents against insects, fungi, and nematodes, as well as some genes encoding putative insecticidal and nematocidal proteins similar to those from *Xenorhabdus bovienii*, *X. nematophila* and *Photorhabdus luminescens*. The predicted protein product of CV1887, for example, besides showing significant similarity to the nematocidal protein 2 from *X. bovienii*, it also exhibited similarity to members of the *Escherichia coli* rhs (recombination hot spot) elements and to YD-repeat proteins from different bacteria. Further analysis revealed that CV1887 and other related, putative insecticidal proteins encoded in the *C. violaceum* genome contained different numbers of partial or complete matches to the Rhs core protein peptide motif $G_{x_3-9}YxYD_{x_2}GR(L, I \text{ or } V)_{x_3-10}G$, where x represents any amino acid. The ability of these YD-repeats to bind to carbohydrates such as heparin and its probable relationship to the potential insecticidal properties of *C. violaceum* YD-repeat proteins is discussed.

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