

Anthranilate synthase subunit organization in *Chromobacterium violaceum*

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Genet. Mol. Res. 7 (3): 830-838 (2008)
Received June 2, 2008
Accepted August 11, 2008
Published September 16, 2008

ABSTRACT. Tryptophan is an aromatic amino acid used for protein synthesis and cellular growth. *Chromobacterium violaceum* ATCC 12472 uses two tryptophan molecules to synthesize violacein, a secondary metabolite of pharmacological interest. The genome analysis of this bacterium revealed that the genes *trpA-F* and *pabA-B* encode the enzymes of the tryptophan pathway in which the first reaction is the conversion of chorismate to anthranilate by anthranilate synthase (AS), an enzyme complex. In the present study, the organization and structure of AS protein subunits from *C. violaceum* were analyzed using bioinformatics tools available on the Web. We showed by calculating molecular masses that AS in *C. violaceum* is composed of α (TrpE) and β (PabA) subunits. This is in agreement with values determined experimentally. Catalytic and regulatory sites of the AS subunits were identified. The TrpE and PabA subunits contribute to the catalytic site while the TrpE subunit is involved in the allosteric site. Protein models for the TrpE and PabA subunits were built by restraint-based homology modeling using AS enzyme, chains A and B, from *Salmonella typhimurium* (PDB ID 1IIQ).

Key words: Tryptophan; Anthranilate synthase; Homology modeling;
Chromobacterium violaceum