Dehydroquinate Synthase as a Target of Development of New Antituberculosis Drugs: Kinetic Characterization.

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Tuberculosis (TB) is responsible for more than 9 million cases and almost 2 million deaths per year worldwide. The emergence of multidrug-resistant strains of *Mycobacterium tuberculosis*, the etiological agent of TB, and the co-infection with the human immunodeficiency virus have created an urgent need for the development of new therapeutics against TB. The enzymes of shikimate pathway are attractive drug targets because this route is absent in mammals, and, in *M. tuberculosis*, it is essential for pathogen viability. This pathway leads to the biosynthesis of aromatic compounds, including aromatic amino acids and it is found in plant, fungi, bacteria and apicomplexan parasites. The second enzyme of this pathway, dehydroquinate synthase (DHQS), catalyzes the conversion of 3-deoxy-*D-arabino*-heptulosonate 7-phosphate in 3-dehydroquinate, the first cyclic compound. The cloning, overexpression and purification to homogeneous solution of DHQS was obtained according to Mendonça *et al*, 2007. The apparent kinetic constants for the substrates were determined by a continuous coupled assay with the human purine nucleoside phosphorilase. The divalent metal ions requirement of DHQS have also been investigating the by a discontinuous method described by Chan *et al*, 1986, due to interferences in the previous method. These results represent an essential step for the rational design of specific inhibitors that can provide a promising alternative to a new, effective, and shorter treatment for TB. Keywords: tuberculosis, shikimate pathway, dehydroquinate synthase, enzyme kinetic. Financial support: CNPq.