A dedicated glutathione S-transferase mediates carbon-sulfur bond formation in gliotoxin biosynthesis.

Scharf DH, Remme N, Habel A, Chankhamjon P, Scherlach K, Heinekamp T, Hortschansky P, Brakhage AA, Hertweck C (2011) A dedicated glutathione S-transferase mediates carbon-sulfur bond formation in gliotoxin biosynthesis. *J Am Chem Soc* 133(32), 12322-12325.

Details

PubMed

Abstract

Gliotoxin is a virulence factor of the human pathogen Aspergillus fumigatus , the leading cause of invasive aspergillosis. Its toxicity is mediated by the unusual transannular disulfide bridge of the epidithiodiketopiperazine (ETP) scaffold. Here we disclose the critical role of a specialized glutathione S-transferase (GST), GliG, in enzymatic sulfurization. Furthermore, we show that bishydroxylation of the diketopiperazine by the oxygenase GliC is a prerequisite for glutathione adduct formation. This is the first report of the involvement of a GST in enzymatic C-S bond formation in microbial secondary metabolism.

Involved units

Biomolecular Chemistry Christian Hertweck Read more

Molecular and Applied Microbiology Axel Brakhage Read more

Leibniz-HKI-Authors



Axel A. Brakhage

Details



Pranatchareeya Chankhamjon

Details



Thorsten Heinekamp

Details



Christian Hertweck

Details



Peter Hortschansky

Details



Daniel H. Scharf

Details



Kirstin Scherlach

Details

Identifier

doi: 10.1021/ja201311d

PMID: 21749092