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N3-haloacetyl derivatives of L-2,3-diaminopropanoic acid: novel inactivators of glucosamine-6-phosphate synthase.

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Abstract

N3-Haloacetyl derivatives of L-2,3-diaminopropanoic acid, novel glutamine analogs, were shown to be strong inhibitors of glucosamine-6-phosphate synthase from bacteria and Candida albicans. The inhibition was competitive with respect to glutamine and non-competitive with respect to D-fructose-6-phosphate. In the absence of glutamine, the tested compounds inactivated glucosamine-6-phosphate synthase from C. albicans with Kinact = 0.5 microM, 0.55 microM and 18.5 microM for bromoacetyl-, iodoacetyl- and chloroacetyl derivatives of L-2,3-diaminopropanoic acid, respectively. The inactivation obeyed the criteria for active site-directed modification.

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