Lessons from nature in catalysis and inhibitor design.

Abstract:

Aldolases have long been of interest to chemists as catalysts for carbon-carbon bond formation. Our laboratory has been studying dihydrodipicolinate synthase (DHDPS), an aldolase that catalyzes a key step in the synthesis of bacterial cell wall peptidoglycan. The enzyme has for decades been considered a target for novel antimicrobial agents. Although much is known about the enzyme, many aspects of DHDPS remain poorly understood. We have been studying the enzyme from Campylobacter jejuni, using kinetic, structural, and biophysical techniques to guide the synthesis of effective and selective inhibitors.