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Review Article

Recent developments in *trans*-sialidase inhibitors of *Trypanosoma cruzi*

Muhammad Kashif, Antonio Moreno-Herrera, Edgar E. Lara-Ramirez, Esther Ramírez-Moreno, Virgilio Bocanegra-García, Muhammad Ashfaq & ...show all

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Abstract

Chagas is a lethal chronic disease that currently affects 8–10 million people worldwide, primarily in South and Central America. *Trypanosoma cruzi trans*-sialidase is an enzyme that is of vital importance for the survival of the parasite due to its key role in the transfer of sialic acid from the host to the parasite surface and it also helps the parasite combat the host's immune system. This enzyme has no equivalent human enzyme; thus, it has become an interesting target for the development of inhibitors that combat the parasite. In this review, we summarize three classes of inhibitors (acceptor, donor and unrelated) with their inhibition values and their mode of action against this enzyme. Based on molecular docking, molecular dynamics and structure-activity relationship studies, it has been discovered that the molecules with $-NH_2$, –OH and –COOH groups on an aromatic ring could be used as a scaffold for the development of new and potent *trans*-sialidase inhibitors due to their key interaction with active enzyme sites. In particular, carboxylic acid derivatives have importance over the sugar moiety due to their ease of synthesis and unique structure-activity relationship.

Keywords: *Trypanosoma cruzi*, trans-sialidase, inhibitors, carboxylic acid, molecular docking

Additional information

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