

Advances in schistosomiasis drug discovery based on natural products.

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Abstract

Schistosomiasis is a neglected tropical disease affecting over 250 million people worldwide. The disease is the second most prevalent neglected tropical disease after malaria. Treatment of schistosomiasis relies on the administration of praziquantel (also known as biltricide). Reliance on a single drug poses a threat to the public health system as the parasite may become resistant as shown by some laboratory findings. The possibility of the resistance rising to clinically significant levels has motivated the scientific community to search for new drug nominees. For a long time, natural products have always been a foundation for the identification of drug leads in the pharmaceutical industry. This paper reviews the progress made in the discovery of natural anti-schistosomal agents in the field of drug discovery. We focus mainly on natural products that have been tested on the schistosome parasite and exhibited potency. We also highlight applications of advanced techniques in drug discovery, with a major focus on computer-aided drug discovery methods. Specifically, we discuss structure-based drug discovery and ligand-based drug design approaches, with an emphasis on virtual screening.