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Review article

Recent advancements in anti-leishmanial research: Synthetic strategies and structural activity relationships

Ojasvi Gupta, Tathagata Pradhan, Rohit Bhatia [1, *], Vikramdeep Monga [1, **]

Department of Pharmaceutical Chemistry, ISF College of Pharmacy, GT Road, Ghal Kalan, Moga, 142001, Punjab, India

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ABSTRACT

Leishmaniasis is a parasitic neglected tropical disease caused by various species of Leishmania parasite. Despite tremendous advancements in the therapeutic sector and drug development strategies, still the existing anti-leishmanial agents are associated with some clinical issues like drug resistance, toxicity and selectivity. Therefore, several research groups are continuously working towards the development of new therapeutic candidates to overcome these issues. Many potential heterocyclic moieties have been explored for this purpose including triazoles, chalcones, chromones, thiazoles, thiosemicarbazones, indole, quinolines, etc. It is evident from the literature that the majority of anti-leishmanial agents act by interacting with key regulators including PTR-1, DHFR, LdMetAP1, MAPK, 14α-demethylase and pteridine reductase-1, etc. Also, these tend to induce the production of ROS which causes damage to parasites. In the present compilation, authors have summarized various significant synthetic procedures for anti-leishmanial agents reported in recent years. A brief description of the pharmacological potentials of synthesized compounds along with important aspects related to structural activity relationship has been provided. Important docking outcomes highlighting the possible mode of interaction for the reported compounds have also been included. This review would be helpful to the scientific community to design newer strategies and also to develop novel therapeutic candidates against leishmaniasis.

Contents

* Corresponding author.
** Corresponding author.
E-mail addresses: bhatirohit5679@gmail.com (R. Bhatia), vikramdeepmonga@gmail.com, vikramdeepmonga@yahoo.com (V. Monga).
[1] Authors shared equal contribution.

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