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Review article

Privileged scaffolds as MAO inhibitors: Retrospect and prospects

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ABSTRACT

This review aims to be a comprehensive, authoritative, critical, and readable review of general interest to the medicinal chemistry community because it focuses on the pharmacological, chemical, structural and computational aspects of diverse chemical categories as monoamine oxidase inhibitors (MAOIs). Monoamine oxidases (MAOs), namely MAO-A and MAO-B represent an enormously valuable class of neuronal enzymes embodying neurobiological origin and functions, serving as potential therapeutic target in neuronal pharmacotherapy, and hence we have coined the term "***Neurozymes***" which is being introduced for the first time ever. Nowadays, therapeutic attention on MAOIs engrosses two imperative categories; MAO-A inhibitors, in certain mental disorders such as depression and anxiety, and MAO-B inhibitors, in neurodegenerative disorders like Alzheimer's disease (AD) and Parkinson's disease (PD). The use of MAOIs declined due to some potential side effects, food and drug interactions, and introduction of other classes of drugs. However, curiosity in MAOIs is reviving and the recent developments of new generation of highly selective and reversible MAOIs, have renewed the therapeutic prospective of these compounds. The initial section of the review emphasizes on the detailed classification, structural and binding characteristics, therapeutic potential, current status and future challenges of the privileged pharmacophores. However, the chemical prospective of privileged scaffolds such as; aliphatic and aromatic amines, amides, hydrazines, azoles, diazoles, tetrazoles, indoles, azines, diazines, xanthenes, tricyclics, benzopyrones, and more interestingly natural products, along with their conclusive SARs have been discussed in the later segment of review. The last segment of the article encompasses some patents granted in the field of MAOIs, in a simplistic way.

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