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REVIEW ARTICLE

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Revealing the role of the benzyloxy pharmacophore in the design of a new class of monoamine oxidase-B inhibitors

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Abstract

The conceptual layout of monoamine oxidase (MAO) inhibitors has been modified to explore their potential biological application in the case of neurological disorders for the time being. The current review article is an effort to display the summation of innovative conceptual prospects of MAO inhibitors and their intriguing chemistry and bioactivity. Based on this scenario, we emphasize the pivotal role of the benzyloxy moiety attached to scaffolds like oxadiazolones, indolalkylamines, safinamide, caffeine, benzofurans, α-tetralones, β-nitrostyrene, benzoquinones, coumarins, indoles, chromones, and chromanone analogs, while acting as an MAO inhibitor.

KEYWORDS
benzyloxy pharmacophore, MAO-A, MAO-B, neurological disorders, structure-activity relationships

1 | INTRODUCTION

In 1969, neurology was primarily concerned with identifying illness by physical examination. People who wanted to pursue a career in neurology were constantly told that it was a specialization to diagnose disease but not to treat it. The most successful treatments were epilepsy, migraine, and Parkinson's disease (PD).[1,2] As examination of the brain throughout the life was relatively rudimentary and the diagnosis was nearly entirely based on the physical examinations. However, advancement in science and technology helped to find the new therapies for many neurological disorders are now available. Several neurodegenerative illnesses are currently being diagnosed easily and have treatment for neurodegeneration, which is the gradual deterioration of a neuron's structure or activity which may lead to cell death.[3–5] Millions of people around the world suffer from neurodegenerative disorders. While therapies can alleviate some of the physical or mental complications associated with neurodegenerative diseases, there are currently no proven cures or methods to delay disease progression. The risk of rapid development of a neurodegenerative disorder rises as one gets older. PD, Alzheimer's disease (AD), dementia, ataxia, Huntington's disease, multiple organ atrophy, progressive supranuclear palsy are examples of neurodegenerative disorders.[6] There are many target enzymes found to treat diseases such as AChE, BuChE, DYRK-1, BACE-1, Cck-1, APOE, gamma-secretase, monoamine oxidases (MAOs), and so on.[7] Among which