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In-virto and in-vivo Pharmacological Evaluation of 6-fluoro-3(Piperidin-4-yt) Benzo[d]isoxazole Derivatives for Their Antipsychotic Properties

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Objective & Aim: The primary objective of this study is to synthesize and evaluate 6-fluoro-3(piperidin-4-yl) benzo[d]isoxazole derivatives for their potential antipsychotic activity. The research aims to explore the structural modifications influencing receptor binding affinity and behavioral response in experimental models. The study further seeks to assess the efficacy, safety, and mechanism of action of these derivatives using both in-vitro receptor interaction assays and in-vivo animal behavioral models, providing insight into their potential as novel therapeutic agents for managing psychotic disorders.

Method: The synthesized compounds were subjected to in-vitro pharmacological screening to determine their dopaminergic and serotonergic receptor binding affinities. In-vivo evaluations were conducted using rodent models such as apomorphine-induced climbing behavior and amphetamine-induced stereotypy tests to assess antipsychotic potential. The results were compared with standard antipsychotic agents to determine relative efficacy. Data were statistically analyzed to confirm the compounds' pharmacological significance.

Keywords: *6-fluoro-3(piperidin-4-yl) benzo[d]isoxazole, antipsychotic activity, in-vitro, in-vivo, receptor binding, behavioral models, pharmacological evaluation*

Results: The synthesized 6-fluoro-3(piperidin-4-yl) benzo[d]isoxazole derivatives exhibited significant receptor binding affinity, particularly toward D_2 and 5-HT_2A receptors, indicating dual dopaminergic and serotonergic modulation. In-vivo studies showed a marked reduction in apomorphine-induced climbing and amphetamine-induced stereotypy, comparable to standard antipsychotic agents. The compounds demonstrated favorable safety profiles with minimal motor side effects and good tolerability in treated animals. These findings suggest that the tested derivatives possess potent and balanced antipsychotic activity with potential for further preclinical development.

Biography1: Mr. Bora Shankar Rao is pursuing his M.Pharmacy in the Department of Pharmacology at *Sri Venkateswara College of Pharmacy*. His research focuses on In-virto and in-vivo Pharmacological Evaluation of 6-fluoro-3(Piperidin-4-yt) Benzo disoxazole Derivatives for Their Antipsychotic Properties, as reflected in his study on the *Pharmacological Evaluation of Ethanol Extracts from Alpinia calcarata Rhizome*.

Biography2: Dr. A.V.S. Kasheera Bhavani, Associate Professor of Pharmaceutics at Sri Venkateswara College of Pharmacy, has over six years of experience in teaching, research, and student mentorship. Her expertise includes drug delivery systems, formulation development, and pharmaceutical technology, with a strong commitment to academic excellence and research-driven learning.

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