

Schiff Bases of Isatin and Admantane-1-Carbohydrazide: Synthesis, Characterization, and Anticonvulsant Activity

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Abstract : Epilepsy is the most common neurological condition and cause of substantial morbidity and mortality. In the present study, the molecular hybridization tool was adopted to obtain six Schiff bases of isatin and adamantane-1-carbohydrazide (18-23). Then, their anticonvulsant activity was evaluated using a pentylenetetrazole- (PTZ-) induced seizure model using phenobarbitone as a positive control. Our findings showed that compounds 18-23 provided significant protection against PTZ-induced seizure, and maximum activities were associated with compound 23. Moreover, all investigated compounds increased the latency of induced convulsion and reduced the duration of epilepsy, with compound 23 being the best. Interestingly, most of the synthesized molecules showed a reduction in neurological symptoms and severity of the seizure. Molecular docking studies suggest GABA-A receptor as a potential target, and in silico ADME screening revealed that the pharmaceutical properties of compound 23 are within the specified limit. Thus, compound 23 was identified as a promising candidate that warrants further drug discovery processes.

Keywords : isatin and adamantane, anticonvulsant activity, PTZ-induced seizure, molecular docking

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