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Synthesis of new Indan-1-one-piperazine derivatives as anticholinesterase agents

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Alzheimer's disease (AD) a type of dementia that causes problems with memory, thinking and behaviour. Donepezil, an Acetylcholinesterase (AChE) inhibitor, gives the most positive response to AD therapy. Donepezil carries indanone and piperidine ring systems on the structure. Thus, in the literature there are lots of studies including the synthesis and anticholinesterase activity investigation of these ring-systems or their bioisosters. Hence, this study was undertaken to synthesize new indan-1-one-piperazine derivatives and to evaluate their anticholinesterase activity. Chemical structures of synthesized compounds were confirmed by spectral data. Ellman's assay was applied in order to investigate inhibitory potency of the compounds against Acetylcholinesterase (AChE) and Butyrylcholinesterase (BChE) enzymes. It was determined that some of the compounds have significant activity on AChE. ADME (Absorption, distribution, metabolism, elimination) predictions were theoretically performed for all compounds in the series. Enzyme kinetics and molecular docking studies were carried out for the most active compound (2o) and nature of inhibition and interactions between enzyme and ligands were described.

Biography

Yusuf Ozkay has completed his PhD from Anadolu University, Faculty of Pharmacy, Department of Pharmaceutical Chemistry. He received Associate Professor Degree in 2012. He is the Vice Dean of Anadolu University Faculty of Pharmacy since April 2013. He has published more than 30 papers in reputed journals. Synthesis of new enzyme inhibitor candidates constitutes his main research area.

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