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Design and synthesis of novel oxindol derivatives with N-benzylpiperidine and N-benzylpiperazine moieties as cholinesterases inhibitors

M. Hosseinpour Tehrani[1,*], M. Alipour[2], M. Khoobi[3], A. Shafiee[1]

[1]Department of Medicinal Chemistry, Faculty of Pharmacy and Pharmaceutical Sciences Research Center, Tehran University of Medical Sciences, Tehran, Iran
[2]School of Chemistry, Department of Science, University of Tehran, Tehran,, Iran
[3]Pharmaceutical Sciences Research Center, Tehran University of Medical Sciences, Tehran, Iran

Background and Aims: Alzheimer's disease (AD) is a progressive, chronic, neurodegenerative disorder, characterized by loss of cognitive ability, severe behavioral abnormalities, and ultimately death. AChE inhibition is currently the most widely studied and developed approach for treating the symptoms of AD and tacrine, donepezil, galantamine, and rivastigmine are the AChE inhibitors in clinical use. Then, we selected and synthesized novel oxindol derivatives through a fast and convenient method.
Methods: We report here the design, synthesis, and AChE inhibitory activity of a new series of potent compounds containing in their structures an aryl piperidine or pipirazine unit and an oxindole ring, connected to each other by a linker of suitable length and nature.
Results: The anticholinesterase activity of synthesized compounds was measured using colorimetric Ellman's method. A significant AChE inhibitory activity was observed for most of these synthesized compounds.
Conclusions: In this work we've synthesized new oxindol derivatives via simple method and with high yield as novel series of cholinesterases inhibitors which showed high inhibitory activity against acetyl cholinesterase enzyme.

Keywords: Oxindol; Cholinesterases inhibitors; N-benzylpiperazine; N-benzylpiperidine