ABSTRAK

Penyakit Alzheimer merupakan salah satu penyebab demensia yang menurunkan kemampuan memori otak. Penggunaan inhibitor enzim asetilkolinesterase, seperti: fisostigmin, takrin, donepezil, rivastigmin, dan galantamin merupakan salah satu terapi pada penderita Alzheimer. Obat-obat tersebut menimbulkan efek samping seperti mual, muntah, pusing, sakit kepala, serta diare. Oleh karena itu, pada penelitian ini dikembangkan suatu senyawa penghambat asetilkolinesterase yaitu turunan fenoksi fenil asetamida yang didesain dengan metode penambatan molekuler. Hasil penambatan menunjukkan senyawa 2-fenoksi-*N*-(3',4',5'-trimetoksifenil) asetamida mempunyai nilai ΔG_{bind} terendah yaitu = -8,24 Kkal/mol. Senyawa tersebut disintesis dengan mereaksikan 2-fenoksiasetil klorida dan 3,4,5-trimetoksi anilin dengan katalis piridin melalui reaksi substitusi nukleofilik asil. Senyawa hasil sintesis berupa serbuk putih kekuningan dengan rendemen sebesar 82,387%. Hasil analisis dengan KLT menunjukkan bercak tunggal dengan R_f sebesar 0,66. Hasil elusidasi struktur dengan spektrofotometri inframerah, spektrometri massa, dan spektroskopi ^1H dan ^{13}C-resonansi magnetik inti menunjukkan bahwa senyawa hasil sintesis adalah 2-fenoksi-*N*-(3',4',5'-trimetoksifenil) asetamida.

Kata kunci: 2-fenoksi-*N*-(3',4',5'-trimetoksifenil) asetamida, penambatan molekuler, substitusi nukleofilik asil, inhibitor asetilkolinesterase, alzheimer

ABSTRACT

Alzheimer's disease is one of the factors causing dementia leading to the loss of memory in the brain. The inhibition of acetylcholinesterase has been commonly strategized in the therapy of Alzheimer's patients by using physostigmine, tacrine, donepezil, rivastigmine, and galantamine. Unfortunately, these drugs showed some adverse side effects such as nausea, vomiting, dizziness, headaches, and diarrhea. Therefore, in this study, it has been developed a potential acetylcholinesterase inhibitor, namely a phenoxy phenyl acetamide derivative using a computational study called molecular docking. The docking results showed the lowest ΔG_{bind} of 2-phenoxy-*N*-(3',4',5'-trymethoxymetyl) acetamide = -8.24 Kcal/ mol. It was synthesized by reacting 2-phenoxyacetyl chloride and aniline derivative with pyridine as the catalyst under acyl nucleophilic substitution reactions. The synthesized product was in the form of yellowish white powder with a yield of 82.387%. The results of analysis with TLC showed a single spot with an R_f of 0.66. The results of structural elucidation by infrared spectrophotometry, mass spectrometry, and ^{1}H and ^{13}C-nuclear magnetic resonance spectroscopy showed that the synthesized compound was 2-phenoxy-N-(3',4',5'-trimethoxyphenyl) acetamide.

Keywords: 2-phenoxy-*N*-(3',4',5'-trymethoxymetyl) acetamide, molecular docking, nucleophilic acyl substitution, acetylcholinesterase inhibitors, Alzheimer's