Research in Pharmaceutical Sciences, 2012;7(5)
School of Pharmacy and Pharmaceutical Sciences
Isfahan University of Medical Sciences

Synthesis of 3-(2-(benzyloxy)phenyl)-5-(methylsulfonyl)-4H-1,2,4-triazole as selective COX-2 inhibitor

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Background and Aims: Non-steroidal anti-inflammatory drugs (NSAIDs) are used in the treatment of arthritic diseases.However, their therapeutic use is often limited by common side effects, the most important one is gastric ulceration. In spite of abundance of NSAIDs in the market, the search continues to develop new drugs that have potent anti-inflammatory activity with minimum side effects and inhibit COX-2 isoenzymesselectively. In this research, based on docking studies, we designed and synthesized a number of new 3-(2-(benzyloxy)phenyl)-5-(methysulfonyl)-4H-1,2,4-triazoleas selective COX-2 inhibitor.
Methods:3-(2-hydroxyphenyl)-1H-1,2,4-triazole-5(4H)-thione was synthesized from methyl salicylate and thiosemicarbazide through nucleophilic substitutionreactionthen Dehydrative Cyclization.The product was S-methylatedand oxidatedto give3-(2-(benzyloxy)phenyl)-5-(methylsulfonyl)-4H-1,2,4-triazole.finally3-(2-hydroxyphenyl)-5-(methylsulfonyl)-4H-1,2,4-triazolewas synthesized from the reaction with benzyl bromide through nucleophilic substitution reaction.
Results: The designed molecule was synthesized and structurally elucidated by IR, NMR and Mass spectra. It was designed based on the SAR of the selective COX-2 inhibitor and docked in COX-2 and COX-1 and showed favorable selectivity for COX-2isoenzyme.
Conclusions: In this research,3-(2-(benzyloxy)phenyl)-5-(methylsulfonyl)-4H-1,2,4-triazole as selective COX-2 Inhibitor was designed, synthesized and approved by IR, NMR and Mass spectra. The docking studies showed that the designed compound had good selectivity for COX-2 isoenzyme.

Keywords: Synthesis; 3-(2-(benzyloxy)phenyl)-5-(methylsulfonyl)-4H-1,2,4-triazole, COX-2 inhibitors