New amide derivatives as inhibitors of glucose 6-phosphate dehydrogenase and docking studies

Yusuf TEMEL
Department of Health Services,
Vocational Schools,
Bingöl University
Bingöl, Turkey
ytemel@bingol.edu.tr

Sinan BAYINDIR
Department of Chemistry,
Faculty of Sciences and Arts,
Bingöl University,
Bingöl, Turkey
sbayindir@bingol.edu.tr

Adnan AYNA
Department of Chemistry,
Faculty of Sciences and Arts,
Bingöl University,
Bingöl, Turkey
aayna@bingol.edu.tr

***Abstract*—** Glucose 6-phosphate dehydrogenase (G6PD, E.C. 1.1.1.49) is one of the key enzymes that involves in the catalysis of a rate-limiting reaction in the pentose phosphate pathway (PPP), providing reducing power to all cells in the form of NADPH and ribose 5 phosphate [1,2]. Recently, the corresponding enzyme, G6PD, has been revealed to be involved in apoptosis, and the efficacy to anti-cancer therapy, making it as a important target in cancer treatment as one of the final products of the PPP, ribose-5-phosphate, is necessary for nucleic acid synthesis and tumour progression[3]. In this study we reported the synthesis of some biologically active indomethacin derivatives and studied their effects on the activity of corresponding enzyme obtained from rat erythrocytes. Among ten heterocyclic compound we found that the inhibition was most potent in the presence of 5 and 6 with an IC50 of 3.85 µM and 3.39 µM respectively while compound 2 and 10 did not alter the activity. In silico docking studies of 5 and 6 were also carried out to understand binding mechanism in detail.

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