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Synthesis and evaluation of possible mechanism of anti nociceptive potential of novel 2-quinolone fused 3,5-pyrazolidinedione derivatives in experimental animal models

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Abstract In the present synthesis a series of 1-(1-methyl-2-oxo-1,2-dihydroquinolin-4-yl)-2-substituted phenylpyrazolidine-3,5-diones were prepared. By the reaction of N-methylbenzenamine with diethyl malonoate 4-hydroxy-1-methylquinolin-2(1H)-one were prepared, which on treatment with posphoryl chloride converted into 4-chloro-1-methylquinolin-2(1H)-one. Subsequently with substituted phenyl hydrazines 1-methyl-4-(2-substitutedphenylhydrazinyl)quinolin-2(1H)-one were obtained, which on reaction with diethyl malonate gave 1-(1-methyl-2-oxo-1,2-dihydroquinolin-4-yl)-2-substituted phenylpyrazolidine-3,5-diones. All structures were characterized by IR, ^{1}HNMR & mass spectrometry. Further all the synthesized compounds were evaluated for their anti-nociceptive activity in mice by Eddy's hot plate and acetic acid induced writhing response. All compounds have shown the activity. In hot plate model compounds QAA-04c and QAA-04d have given more activity than standard, whereas in case of acetic acid induced writhing model compounds QAA-04a and QAA-04d have given significant analgesic activity which is comparable with the standard drug. Compound QAA-04b has shown least analgesic activity. Compound QAA-04a was almost equal in activity to the standard drug diclofenac sodium and was considered as the lead molecule.

Keywords: - N-methylbenzenamine, diethyl malonoate, Eddy's hot plate, anti-nociceptive activity

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