Synthesis, Structure, and Analgesic Activity of 4-(5-Cyano-{4-(fur-2-yl)-1,4-dihydropyridin-3-yl}carboxamido)-benzoic Acids Ethyl Esters

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Abstract—A series of new hybrid molecules containing fragments of anestesin and 4-(2-furyl)-1,4-dihydronicotinonitrile have been obtained starting from diketene, ethyl 4-aminobenzoate, cyanothioacetamide, and furfural. The obtained compounds have been investigated for the analgesic activity *in vivo* (rats) in the orofacial trigeminal pain and acetic acid induced writhing tests. The compounds exhibiting analgesic effect superior to that of the reference drug (metamizole sodium) have been revealed. Molecular docking has been performed for the considered compounds with respect to a wide range of protein targets, including cyclooxygenases COX-1 and COX-2.

Keywords: cyanothioacetamide, nicotinonitriles, 1,4-dihydropyridines, anesthesin, analgesic activity

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