

1-benzoyl-2-(2-nitrophenyl)-1H-benzimidazole derivatives: A novel approach to the development of new HIV-1 reverse transcriptase inhibitors

Vásquez, D., Lagos, C. F., Mella-Raipán, J., González, L., Ebensperger, R., Alvarez-Figueroa, M. J., ... & Pessoa-Mahana, C. D. (2007). 1-benzoyl-2-(2-nitrophenyl)-1H-benzimidazole derivatives: A novel approach to the development of new HIV-1 reverse transcriptase inhibitors. *Journal of the Chilean Chemical Society*, 52(4), 1281-1287. Accessed 26 Jul 2021.

Abstract

A novel approach to the development of a new class of HIV-1 RT inhibitors is reported. The 1-benzoyl-2-aryl-1H-benzimidazole series was designed as a combination of two previously reported active scaffolds, the benzimidazole and benzoyl moieties. The active compounds of the series effectively blocked the reverse transcription in the micromolar range in an in vitro assay containing the wild-type enzyme. We have demonstrated that the 2-nitrophenyl C-2 substituent is an important structural feature for the desired biological activity in this series. Molecular docking experiments suggest that the active compounds adopt a butterflylike conformation within the binding pocket of the enzyme, with the benzoyl moiety located in an extended hydrophobic region defined mainly by Tyr1 81, Tyr1 88, and Trp229.

Keywords

NNRTIs, HIV-1 RT, Molecular modeling, Benzoylbenzimidazole derivatives.