pharmaceuticals

MDPI

Meeting Report

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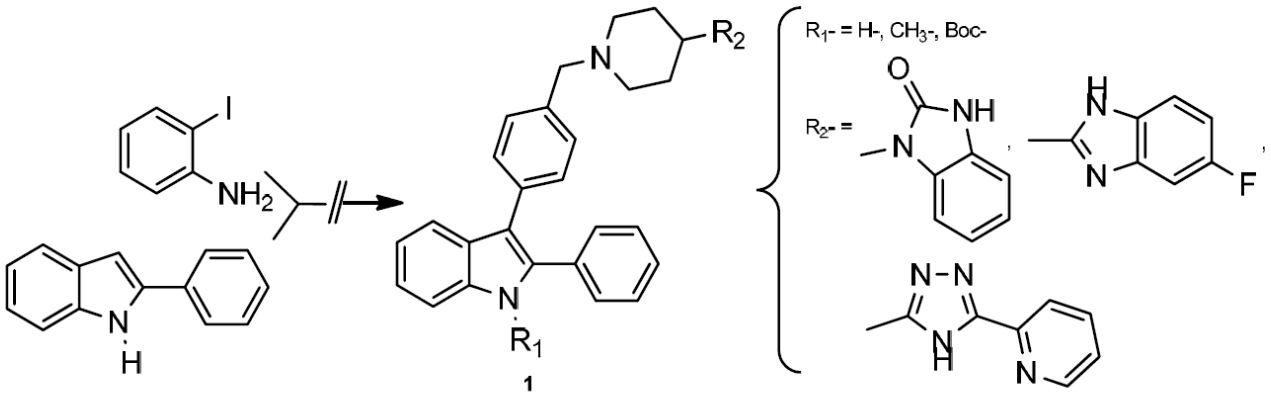
4.1. Design, Synthesis, and Evaluation of the Cytotoxic Activity of New 3-{4-[(4-(Substituted)piperidin-1-yl)benzyl]}-2-Phenylindoles in Myeloid and Lymphoid Leukemia Cell Lines

Jean Guillon [1,*], Marian Vincenzi [1,2], Noël Pinaud [3], Luisa Ronga [1], Filomena Rossi [2], Solène Savrimoutou [1], Stéphane Moreau [1], Mathieu Marchivie [4] and Vanessa Desplat [5]

1 Université de Bordeaux, UFR des Sciences Pharmaceutiques, INSERM U1212/UMR CNRS 5320, Laboratoire ARNA, 146 Rue Léo Saignat, F-33076 Bordeaux CEDEX, France
2 Department of Pharmacy and CIRPeB, University of Naples "Federico II", Via Mezzocannone, 16, 80134 Naples, Italy
3 Université de Bordeaux, ISM-CNRS UMR 5255, F-33405 Talence CEDEX, France
4 Université de Bordeaux, ICMCB CNRS-UPR 9048, 33608 Pessac CEDEX, France
5 Université de Bordeaux, UFR des Sciences Pharmaceutiques, Laboratoire BMGIC INSERM U1035, F-33076 Bordeaux CEDEX, France
* Correspondence: jean.guillon@u-bordeaux.fr

Acute leukemia is one of the most aggressive hematopoietic malignancies and is characterized by the abnormal proliferation of the immature cells and a premature block in lymphoid or myeloid differentiation. Adult acute leukemia has a poor prognosis due to a large number of relapses, because of treatment-related resistance mechanisms (Lichtman, M.A. *Oncologist* 2008, *13*, 126–138). Therefore, there is an urgent need to find new therapeutics, which could led to the development of novel treatment strategies with less or minimal side effects. Heterocyclic compounds attracted a lot of attention because of their wide spread biological activities. Among them, the indole heterocyclic framework constitutes the basis of an important class of compounds possessing interesting biological activities.



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In the course of our work devoted to discover new compounds employed in cancer chemotherapy (Desplat, V., et al. *Eur. J. Med. Chem.* 2016, *113*, 214–227; Guillon, J., et al. *Struct. Chem. Crystallogr. Commun.* 2016, *2*, 18), we report herein on the synthesis and biological evaluation of new 3-{4-[(4-(substituted)piperidin-1-yl)benzyl]}-2-phenylindoles **1**. The cytotoxicity of these new derivatives was then evaluated against five different leukemia cell lines, including Jurkat and U266 (lymphoid cell lines), and K562, U937, HL60 (myeloid cell lines), as well as normal human peripheral blood mononuclear cells (PBMNCs). Biological results showed antiproliferative activities on the leukemia cell lines with IC_{50} in the μM range. In addition, some compounds are promising because of their high activity against leukemia (IC_{50} = 4–12 μM) and their low activity against normal hematopoietic cells (IC_{50} >50 μM).

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