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Chemistry

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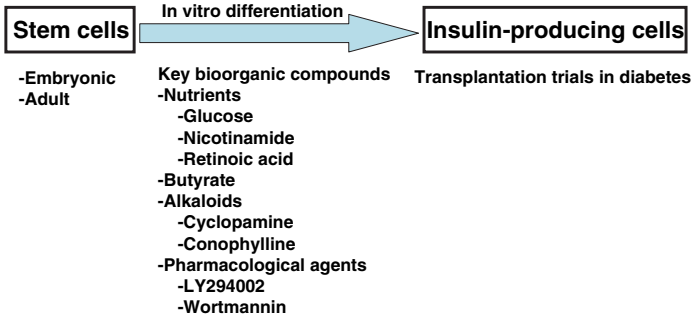
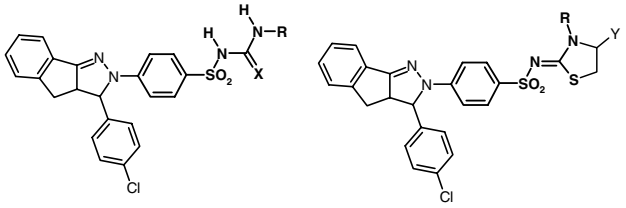
Contents

REVIEW



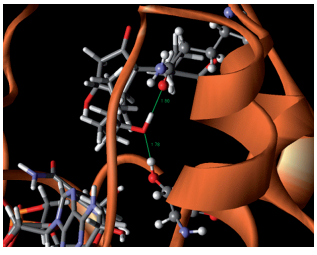
Stem cells have proven to be of great interest for diabetes treatment. This pathology is caused by β-cell destruction. Obtaining insulin-secreting β-cells from stem cells to implant in diabetic patients is a therapeutic alternative to consider. Bioorganic compounds can help in the control of in vitro differentiation processes towards β-cell-like fates.

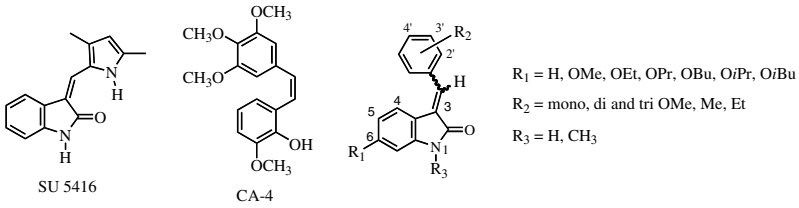
ARTICLES

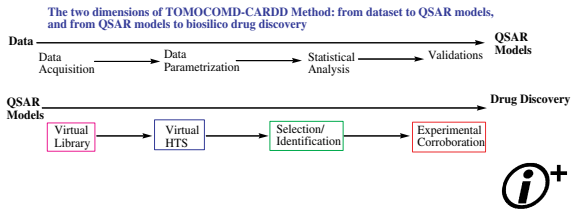


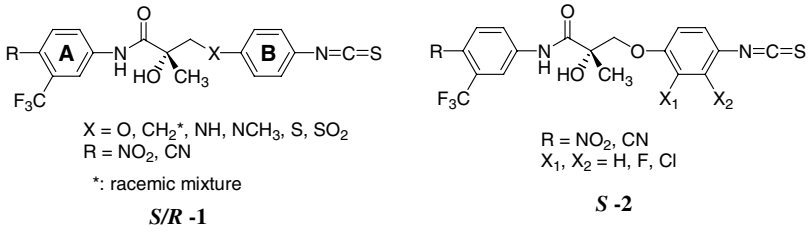
A series of 3-(4-chlorophenyl)-[1,2-*c*]pyrazol(in)es-substituted with benzenesulfonamides, N^1,N^3-disubstituted sulfonylurea and sulfonylthiourea pharmacophores, and some derived thiazolidinone and thiazoline ring systems and evaluated for their antitumor activity according to the protocol of the NCI. Eight compounds showed promising broad spectrum antitumor activity against most of the tested subpanel tumor cell lines.

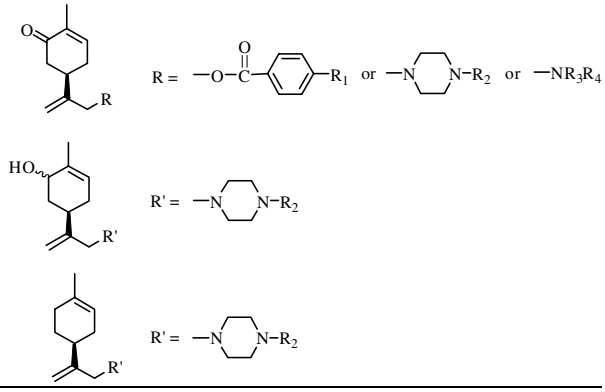
Gln-148 of human 15-hydroxyprostaglandin dehydrogenase is important in the proper positioning of the C-15 hydroxyl group of the prostaglandin E_2 during catalytic oxidation of the substrate. The model indicates that the 15-hydroxyl group of the prostaglandin E_2 is anchored by hydrogen bonding with the hydroxyl group of Ser-138 and the side chain oxygen atom of Gln-148.

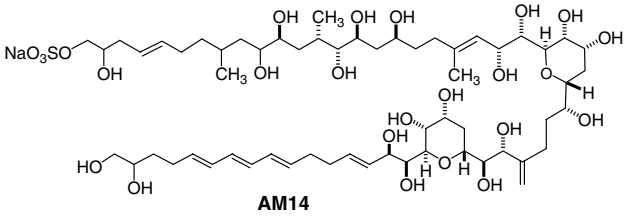












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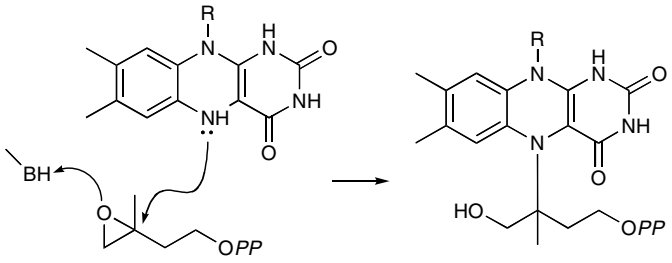

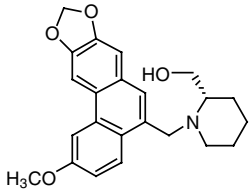

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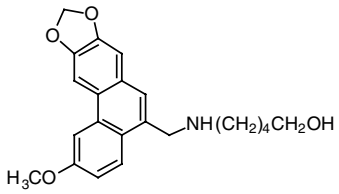

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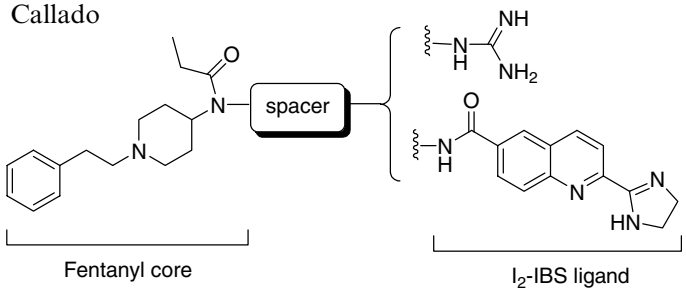
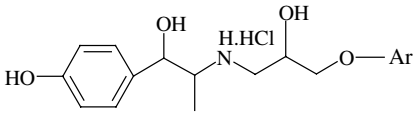
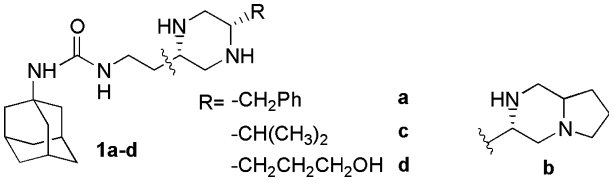
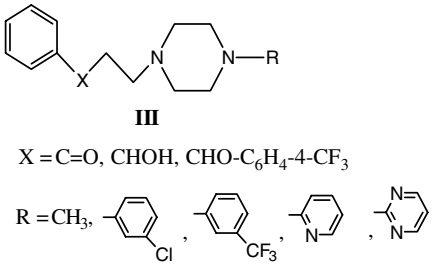


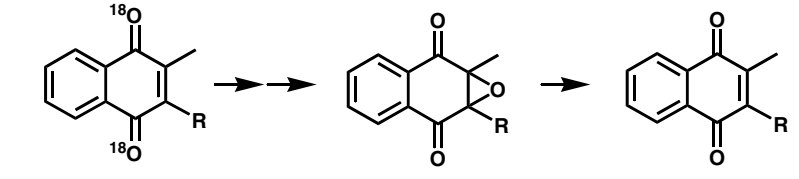


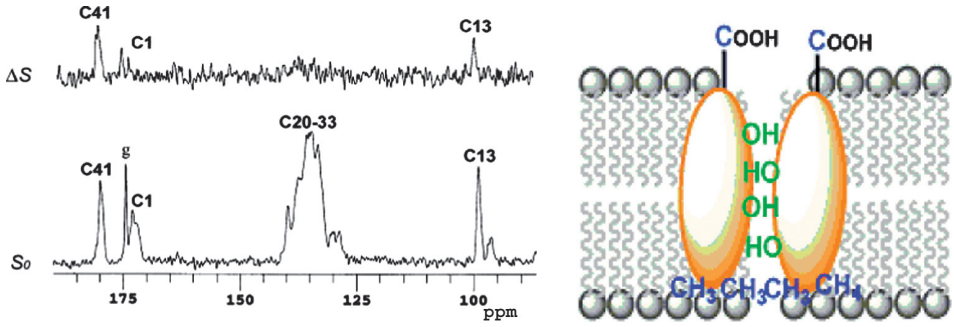
Synthesis and evaluation of 1-(4-hydroxyphenyl)-2-[3-(substituted phenoxy)-2-hydroxy-1-propyl]aminopropan-1-ol hydrochlorides as uterine relaxants is reported.

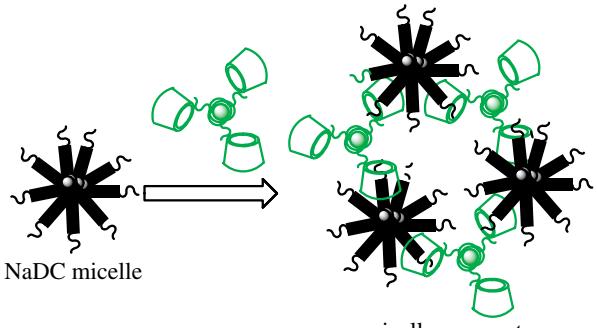


A new class of sEH inhibitors was designed and synthesized by the incorporation of 5-substituted piperazine as a favorable secondary pharmacophore into 1,3-dialkyl urea platform, with greatly improved physical properties.

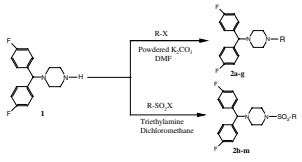


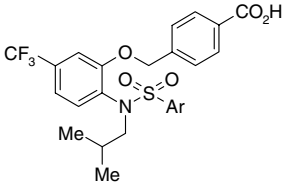






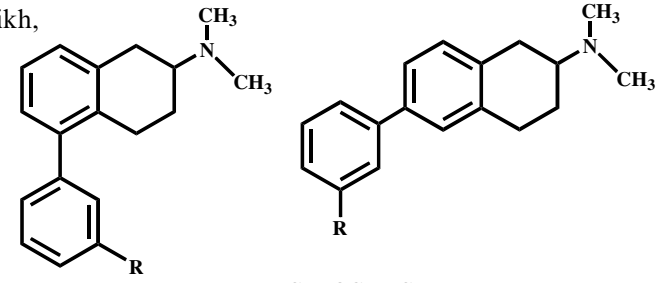
A series of novel substituted 1-[bis(4-fluorophenyl)-methyl]piperazine derivatives (**2a**–**m**) have been synthesized. The synthesized compounds were characterized by IR and ^{1}H NMR. All the synthesized compounds were evaluated in vitro for their efficacy as antimicrobial agents against representative strains of Gram-positive (*Staphylococcus aureus* ATCC 25953, *Streptococcus pneumoniae* ATCC 49619, *Bacillus cereus* 11778, and *Bacillus subtilis* 6051) and Gram-negative bacteria (*Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 2853, *Proteus vulgaris* ATCC 2853, and *Salmonella typhi* ATCC 9484) by paper disc diffusion and microdilution methods. Among the newly synthesized compounds **2e**, **2l**, and **2m** showed potent antimicrobial activities, when compared to the standard drug.



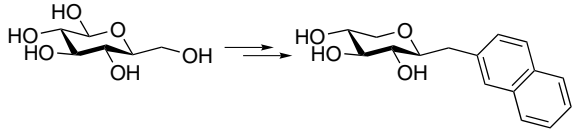


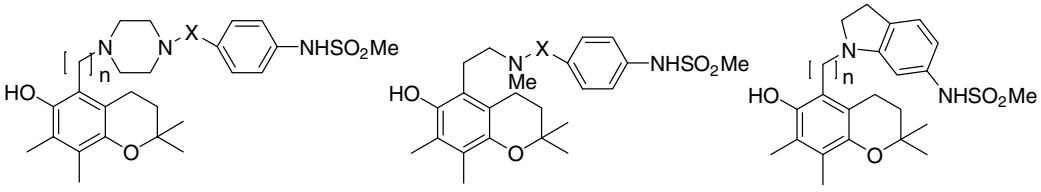
Ar	**1**	**2**	**3** Me	**4**
EP1 functon (IC_{50}, μM)	0.13	0.0039	0.0022	0.006
clogP	6.91	5.56	6.08	5.47

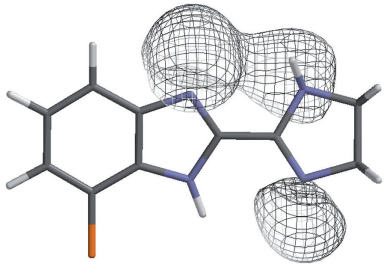
Heteroaryl sulfonamide derivatives **2**–**4** were identified as more potent and less lipophilic EP1 receptor antagonists than **1**.

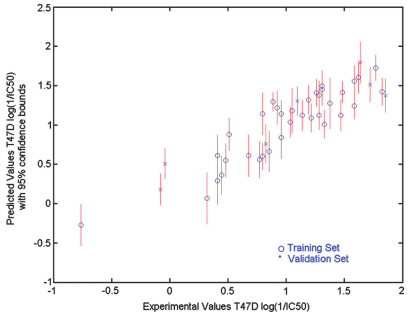


R= H, CF_3, OCH_3, Cl, or Br

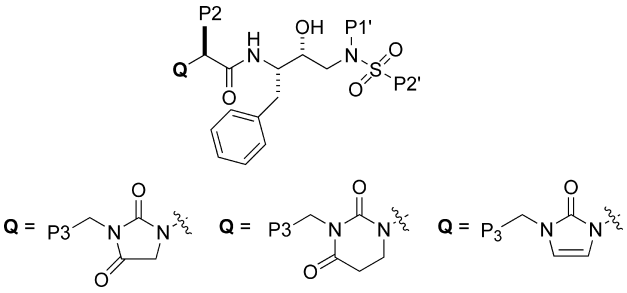




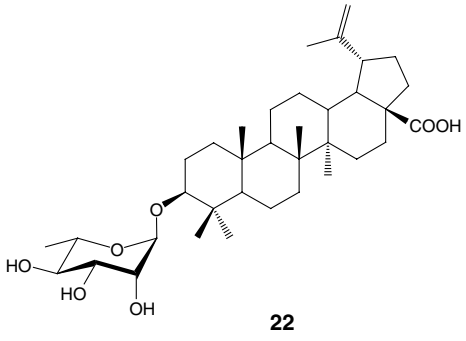




A linear quantitative structure–activity relationship (QSAR) model is presented for modeling and predicting induction of apoptosis by 4-aryl-4*H*-chromenes. The model was produced by using the multiple linear regression (MLR) technique on a database that consists of 43 recently discovered 4-aryl-4*H*-chromenes. Among the 61 different physicochemical, topological, and structural descriptors that were considered as inputs to the model, seven variables were selected using the elimination selection-stepwise regression method (ES-SWR). The physical meaning of each descriptor is discussed. The accuracy of the proposed MLR model is illustrated using the following evaluation techniques: cross-validation, validation through an external test set, and Y-randomization. Furthermore, the domain of applicability which indicates the area of reliable predictions is defined.



A series of HIV protease inhibitors containing various cyclic structural motifs (**Q**) which occupy subsite S_2 of HIV protease and facilitate the access of P3 groups into subsite S_3 via a *N*-methylene linker was designed and evaluated for their antiviral activity against wild-type HIV virus with and without human serum. Promising compounds were further screened against resistant strains of HIV. In addition, the pharmacokinetic properties in rats were studied.



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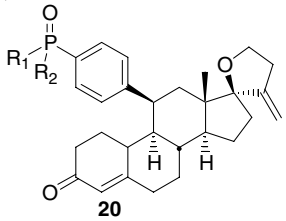
α-L-Rhamnopyranoside of betulinic acid (**22**) exerted the strongest in vitro cytotoxicity of tested glycosides with an activity of 8- to 12-fold more potent toward cancerous cells than on healthy cells.



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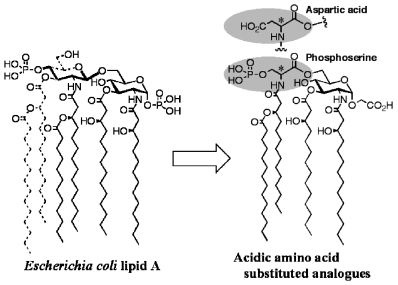
A series of phosphorus-containing 11β-aryl-substituted steroids were synthesized and evaluated for their in vitro progesterone receptor and glucocorticoid receptor antagonist activities. Selected compounds were tested in rat in C3 assay for PR antagonist activities.



OTHER CONTENTS

*Corresponding author

ⓘ+ Supplementary data available via ScienceDirect

COVER

2006: The cover figure shows a synthetic multifunctional pore that is composed of rigid-rod staves (para-octiphenyls, tan) and beta-sheet hoops (arrows) and can be activated with external ligands (fullerenes, golden spheres) and closed with internal blockers (alpha-helix, red ribbon) [Gorteau, V.; Bollot, G.; Mareda, J.; Pasini, D.; Tran, D.-H.; Lazar, A. N.; Coleman, A. W.; Sakai, N.; Matile, S. *Bioorg. Med. Chem.* **2005**, *13*, 5171–5180].

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