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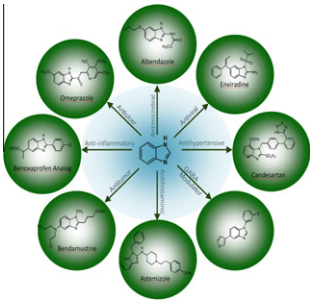
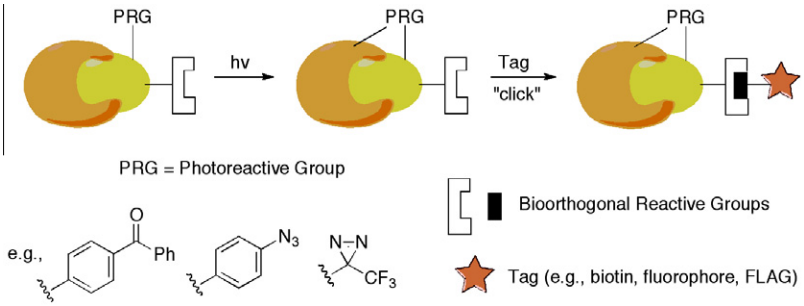
Contents

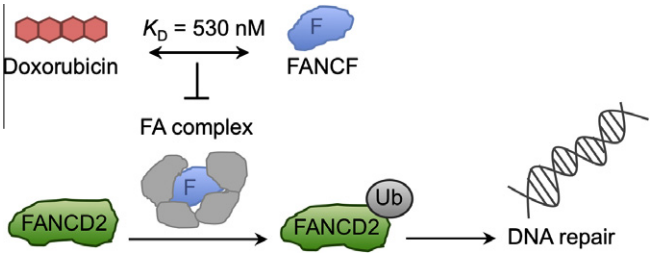
REVIEWS

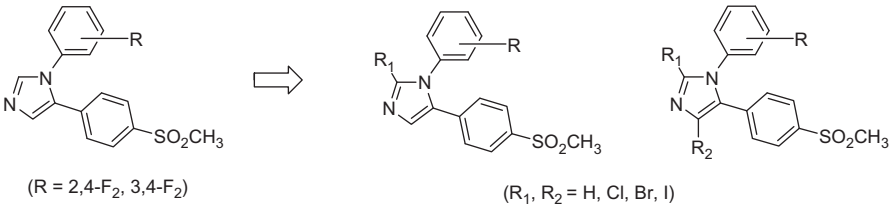


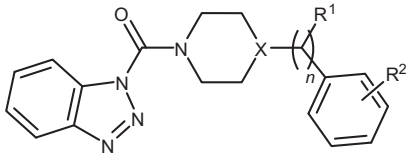
Various compounds derived benzimidazole nucleus exhibit different pharmacological activities. These are discussed on the basis of substitution pattern around the nucleus with an aim to help medicinal chemists for developing an SAR on benzimidazole derived compounds for each activity. It will further help in the development of novel benzimidazole compounds.



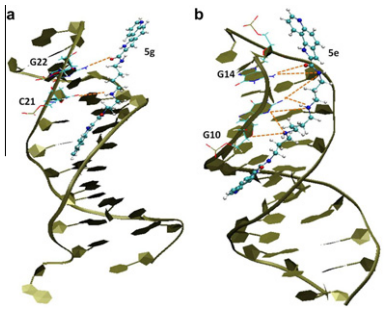
ARTICLES



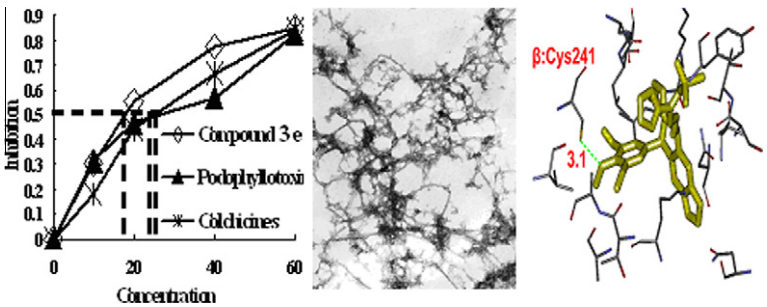


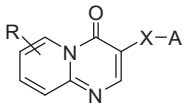


29 (ML30):	X = N; n = 1; R^1 = Ph; R^2 = H	IC_{50}^{hMAGL} = 0.54 nM; IC_{50}^{hFAAH} = 562 nM
11:	X = CH; n = 1; R^1, R^2 = H	IC_{50}^{hMAGL} = 3 nM; IC_{50}^{hFAAH} = 2 nM
16:	X = N; n = 1; R^1 = H; R^2 = 3-Cl	IC_{50}^{hMAGL} = 2 nM; IC_{50}^{hFAAH} = 9 nM
31:	X = N; n = 0; R^2 = 2-CH_3	IC_{50}^{hMAGL} = 71 nM; IC_{50}^{hFAAH} = 3 nM
32:	X = N; n = 0; R^2 = 2-NO_2	IC_{50}^{hMAGL} = 224 nM; IC_{50}^{hFAAH} = 19 nM

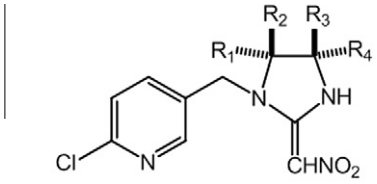


Docking of (a) **5g** and (b) **5e** in the crystal DNA sequence 1d64. Principal hydrogen bonding interactions are shown in dotted lines.

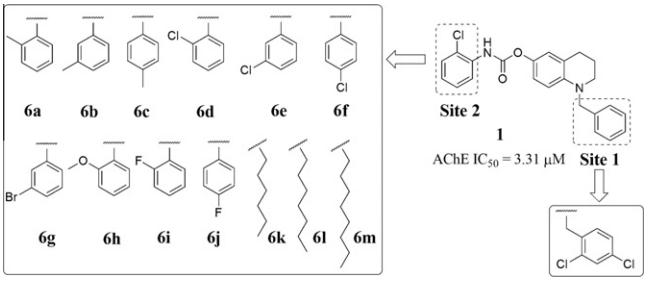




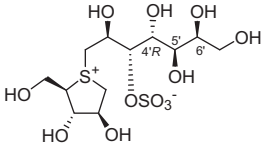
X = Urea, carbamate, amide
A = Alkyl/aryl/heteroaryl
Pyrido[1,2-*a*]pyrimidin-4-ones



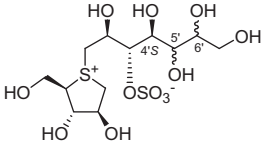
R = H, Me, Et, *n*-Pr, isopropyl, and isobutyl



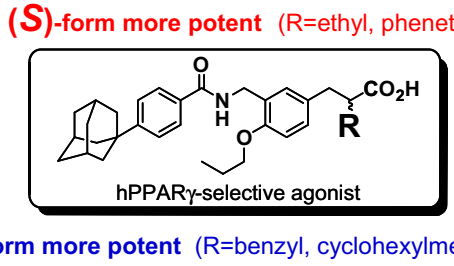
To examine the role of the side chain of kotalanol (**2**), a potent natural α-glucosidase inhibitor isolated from *Salacia reticulata*, on inhibitory activity, four diastereomers (**11a**–**11d**) with reversed configuration (S) at the C-4′ position in the side chain were synthesized and evaluated. Two of the four (**11b** and **11d**) significantly lost their inhibitory activity against both maltase and sucrase, while the other two (**11a** and **11c**) sustained the inhibitory activity to a considerable extent, showing distinct activity in response to the change of stereochemistry of the hydroxyls at the 5′ and 6′ positions. Different activities were rationalized with reference to in silico docking studies on these inhibitors with hNtMGAM. Against isomaltase, all four analogs showed potent inhibitory activity as well as **2**, and **11b** and **11d** exhibited enzyme selectivity.

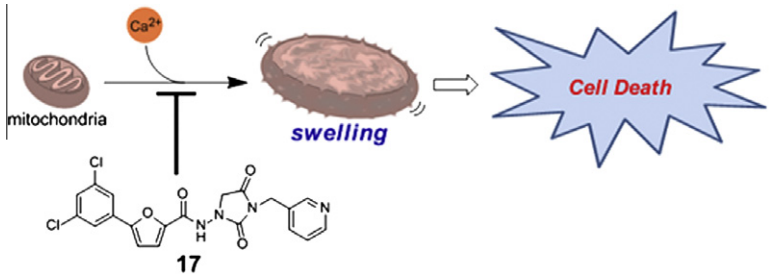


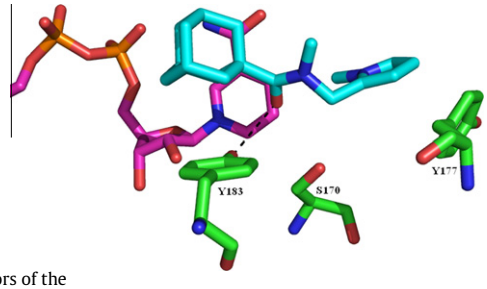
2: kotalanol



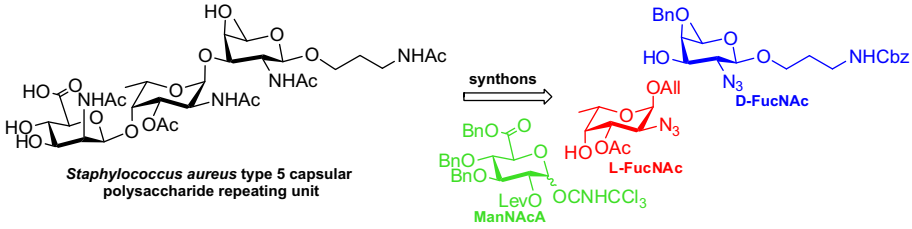
11a : 5′α-OH, 6′α-OH **11b : 5′β-OH, 6′β-OH**
11c : 5′α-OH, 6′β-OH **11d : 5′β-OH, 6′α-OH**

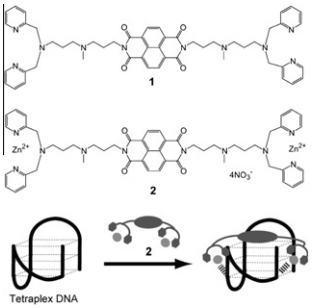


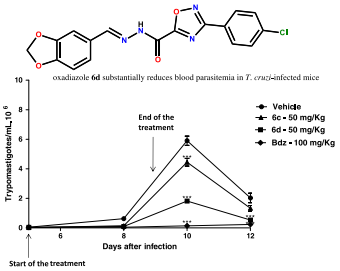




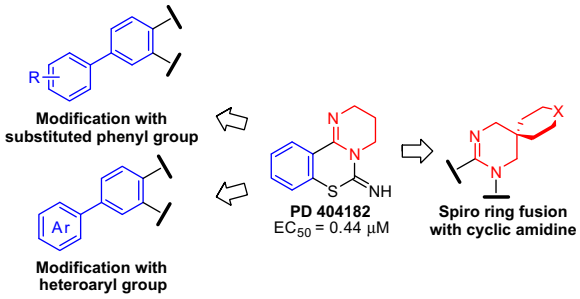
Series of adamantyl carboxamide and acetamide derivatives were identified, providing potent and selective inhibitors of the therapeutic target human 11β-hydroxysteroid dehydrogenase type 1.

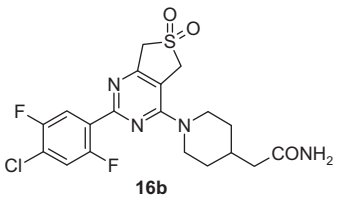




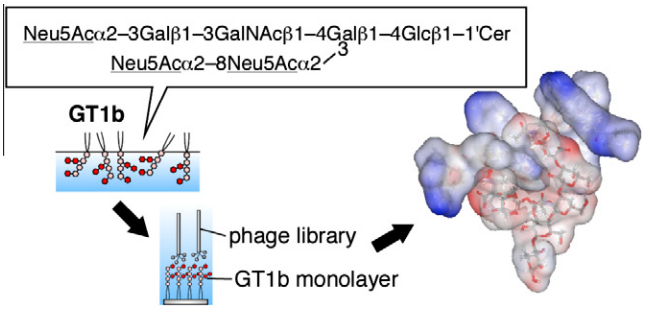


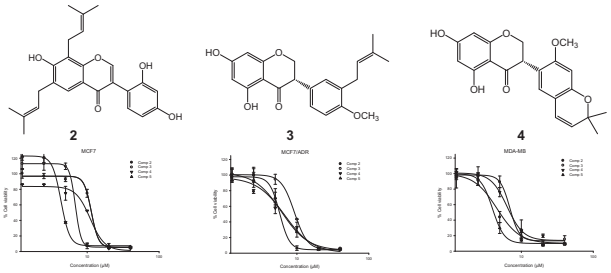
Oxadiazole **6d** substantially reduces blood parasitemia in *Trypanosoma cruzi*-infected mice.



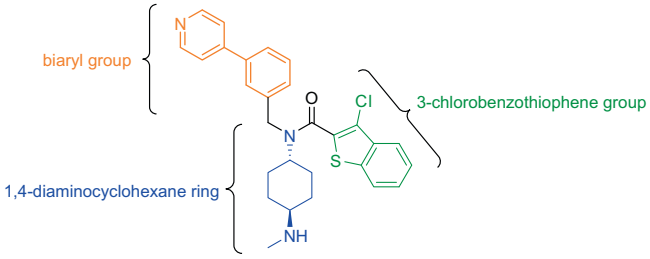


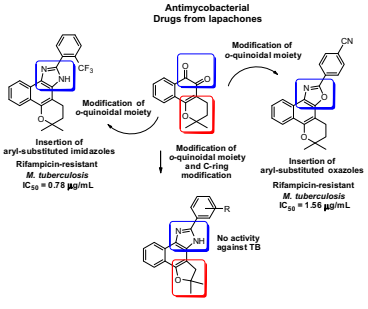
A series of fused-pyrimidine derivatives have been discovered as potent and orally active GPR119 agonists. 2-{1-[2-(4-Chloro-2,5-difluorophenyl)-6,6-dioxido-5,7-dihydrothieno[3,4-*d*]pyrimidin-4-yl]piperidin-4-yl}acetamide (**16b**) was found to have extremely potent GPR119 agonistic activity and improved glucose tolerance at 0.1 mg/kg po in mice.



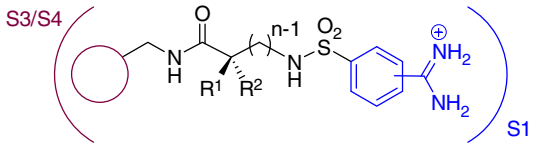


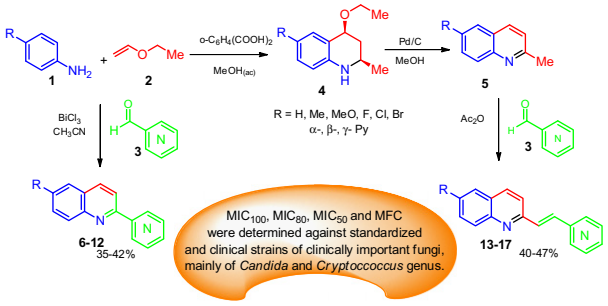
Four new (**1**–**4**) along with 2 known prenylated isoflavonoids (**5**–**6**) were isolated from an EtOAc extract of the root of *Erythrina addisoniae*. All the isolates were evaluated for their inhibitory effects on protein tyrosine phosphatase 1B (PTP1B), as well as their growth inhibition on MCF7, adriamycin-resistant MCF7 (MCF7/ADR), and MDA-MB-231 breast cancer cell lines. Compounds which exhibited PTP1B inhibitory activity (IC_{50} values ranging from 4.6 ± 0.3 to 24.2 ± 2.1 μM) showed potential cytotoxic activity (IC_{50} values ranging from 3.97 ± 0.17 to 11.4 ± 1.9 μM).

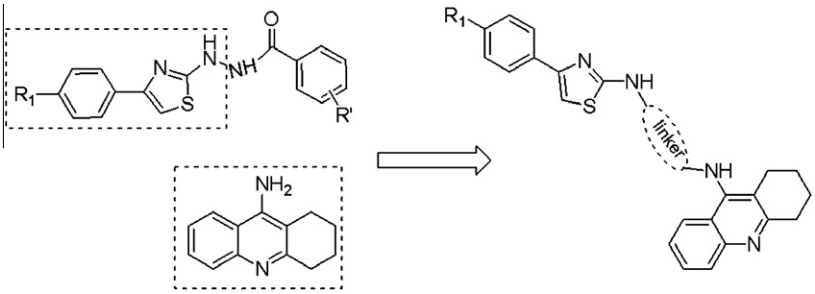




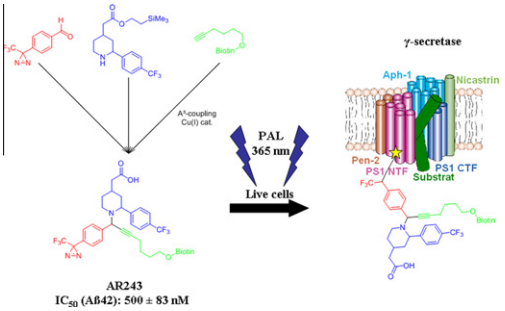
Twenty-three naphthoimidazoles and six naphthoxazoles were synthesised and evaluated against susceptible and rifampicin- and isoniazid-resistant strains of *Mycobacterium tuberculosis*. Among all the compounds evaluated, fourteen presented MIC values in the range of 0.78 to 6.25 μg/mL against susceptible and resistant strains of *M. tuberculosis*. Five structures were solved by X-ray crystallographic analysis. These substances are promising antimycobacterial prototypes.

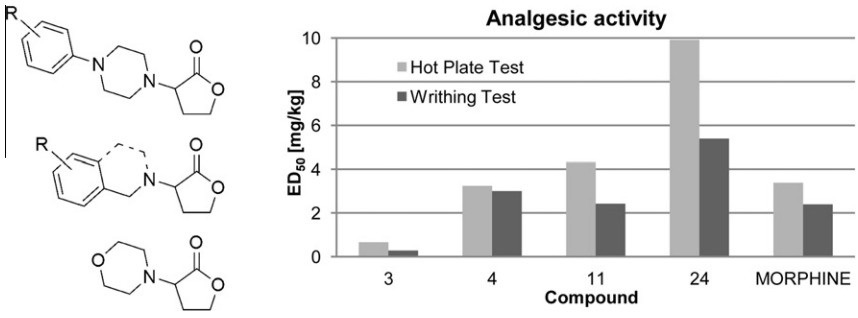






A series of novel multifunctional compounds were designed and synthesized by conjugating tacrine with 4-phenyl-2-aminothiazole group though different middle linkers. These novel hybrids can inhibit cholinesterase activity, Aβ self-aggregation and intracellular Ca^{2+} overload.





*Corresponding author
Supplementary data available via SciVerse ScienceDirect

COVER

The paper describes the development of a new, potent and non-toxic hedgehog pathway agonist. Compound **10c** proved to stimulate VEGF production in vitro. The hedgehog pathway is involved in the pathogenesis of several diseases including a malformation called Cyclopia (the island in the background shows the putative island of Cyclops in the Aegean Sea). [Seifert, K.; Büttner, A.; Rigol, S.; Eilert, N.; Wandel, E.; Giannis, A. *Bioorg. Med. Chem.* **2012**, *20*, 6465–6481.]

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