One-pot synthesis of Novel isoxazoline, pyrazoles, bypyrimidine and Oxime templates and their antimicrobial activity

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Abstract

Novel isoxazoline, pyrazole, oxime and bypyrimidine analogues have been synthesized from the flavonoids of *Polygonum senegalense and Psiadia punctulata* as starting material. Both isoxazolines and pyrazoles are known to possess a wide range of biological activities. The isoxazoline derivative, 2-(4,5-dihydro-5-phenylisoxazol-3-yl)-5-methoxybenzene-1,3-diol **(1),** was successfully synthesized by a reaction of a chalcone with hydroxylamine hydrochloride. A reaction between a flavone and hydrazine hydrate (excess) in ethanol afforded a pyrazole, 5-methoxy-2-(5-(2,3,4,5- tetramethoxyphenyl)-1*H*-pyrazol-3-yl)benzene-1,3-diol **(2).** The oxime **(3)** was obtained by reacting 1',4'-dihydroxy-6'-methoxychalcone chalcone with hydroxylamine hydrochloride. The synthesis of bypyrimidine, 4,5-dihydro-6-(2,4- dihydroxy-3,6-dimethoxyphenyl)-4-phenylpyrimidine-2-(1*H*)- thione (**4**) was accomplished by the reaction of -unsaturated chalcone with thiourea. The structure proofs were provided by ESIHRMS, ^{1}H-NMR, ^{13}C-NMR and DEPT analyses. Compound **1** exhibited anti-fungal activity showing $1C_{50}$ values of 7.56, 8.01, 8.01 and 13.74µg/ml against *S. aureus, C. neoformans, C. krusei* and *C. glabrata* respectively. The compound also exhibited anti- leishmanial IC_{50} activity value of 33.98 µg/mL against *Leishmania donovani*. The other analogues demonstrated insignificant anti-fungal and Antileishmanial activities against standard strains. Compound 1 was, therefore, found to be a potential lead for fungal diseases and leishmaniasis.

Key: pyrazole, isoxazoline, oxime, bypyrimidine