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Synthesis and antibacterial activity of 1-[(1H-benzo[D] imidazole-1-yl) (4-substituted phenyl) methylene]-2-[4- substituted benzylidene] hydrazine derivatives

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Antibacterial resistance is one of the major global health issues and many infectious organisms have adapted to the drugs designed to kill them, making the products less effective. In view of these emerging resistance problems, there is an urgent need for new anti-resistance compounds. Benzimidazole is a heterocyclic aromatic organic compound and is a constituent of many bioactive compounds that are of wide interest, because of their diverse biological and clinical applications. A series of novel schiff base of Benzimidazole derivatives were synthesised and evaluated for antibacterial property. The title compound, 1-[(1H-benzo[d]imidazole-1-yl) (4'-substituted phenyl) methylene]-2-[4"- substituted benzylidene] hydrazine derivatives were synthesised by condensing benzimidazole with substituted benzoyl chloride followed by hydrazonation, further the final Schiff base was prepared by reacting with different substituted aromatic aldehydes and the structure of newly synthesised compounds were characterised by using 1H NMR & MASS spectral data. The antibacterial activity of the newly synthesized benzimidazole hydrazine derivatives (IIIa, IIIb) and schiff bases (IVa-h) were evaluated against the gram positive (S. aureus and B. cereus) and gram negative bacteria (P. aeruginosa and E. coli) by using the agar well diffusion method at a concentration of 100µg/mL using Norfoloxacin as reference drug. From the study, it has been observed that substitution on the parent hydrazine derivative alter the antibacterial activity and the parent hydrazine derivatives showed very lower degree of activity against S. aureus and B. cerus. Among the benzimidazole Schiff base derivatives, 1-[(1H-benzo[d]imdiazol-1-yl) (4-methoxyphenyl) methylene]-2-(2,3,4-trimethoxy benzylidene) hydrazine (IVb) showed better antibacterial activity against gram positive bacteria and while remaining all the synthesized compounds showed moderate in action. None of the compounds showed any activity against gram negative bacteria.

Biography

Gopal Natesan has completed his Doctoral degree (PhD) in Pharmaceutical Chemistry from Hamdard University (Jamia Hamdard) New Delhi, India in 2000 and currently serving as Professor of Medicinal Chemistry & Deputy Dean of Research & Innovation and Students Affairs in Faculty of Pharmacy, MAHSA University, Kuala Lumpur, Malaysia. His research focuses on the synthesis of newer small chemical entities, quinazolinones heterocyclic pharmacophore and their preliminary screening in both in-vivo and in-vitro models mainly focusing on pain & inflammation and also for newer microbial agents. He has published >40 articles in indexed journals and presented >80 papers in conferences and invited speaker at international scientific meetings and conferences and serves as reviewer for several scientific international journals and also as Editorial/Advisory board of various journals.

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