Short Communication

S-Triazines: As Alternative Drugs for the Treatments of Typhoid

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Abstract

1-substituted-2-thio-(1H)-4-[(2-imino-4-thiobiureto-5-yl) guanyl]-6-substitutedamino-1,2-dihydro-s-triazines [3a(i) to 3f(iv)] have been established on the basis of elemental analysis and IR and NMR spectral data. All the synthesized compounds were screened for their antimicrobial activity against both gram-positive and gram-negative human pathogens.

Keywords: S-triazine, antimicrobial activity.

Introduction

The literature survey reveals that the heterocyclic compounds containing nitrogen and nitrogen and sulphur have gain immense importance in human life due to their variety of applications in agricultural, medicinal, pharmacological and industrial value. It has also been found that the heterocyclic compounds containing S-triazine in the nucleus have been successfully tested against several pathogens and found that they possess insecticidal, medicinal, industrial, pharmaceutical, agricultural and bactericidal properties. Some triazine compounds show remarkable biological activity and help to find better alternative against drug.

Material and Methods

"Any chemical moiety which inhibit the growth of microorganism or kill it is called as Antimicrobial activity." All S-triazine compounds were screened for their antibacterial activity using cup plate diffusion method. The bacterial organisms used include both gram positive and gram negative strains like S. aureus, S. typhi, A. aerogenes, E. coli and B. subtilis. The medium was prepared by dissolving 28 gm of ingredients in one liter of distilled water and was sterilized at 121°C temperature and 15 lbs/inch pressure in an autoclave for 15 minutes. After sterilization it was cooled down to 50°C and poured into sterile petriplates and allowed to solidify. The media plates were then seeded with 24 hrs old active nutrient growth culture of the test organism in order to obtain lawn culture. The compounds were dissolved in 50% dimethylformamide (DMF) solvent at fix concentration 100 µg/ml. To these added 2 drops of test solutions of synthesised compounds. Plane DMF solvent was used as control. The plates were then incubated at 37°C for 24 hrs. After incubation the zones of inhibition were recorded around the wells and result are cited in table –1.

Experimental: All chemicals used were of analar grade. Aryl/alkylisothiocyanate, Aryl/alkylisocyanodichlorides were prepared according to literature method. Melting points of all synthesized compounds were determine in open capillary. IR spectra were recorded on Perkin-Elmer spectrometer in the range 4000-400 cm⁻¹ in KBr pellets. PMR spectra were recorded with TMS as internal standard using CDCl₃ and DMSO-d₆. TLC checked the purity of the compounds on silica gel-G plates with layer thickness of 0.3 mm.

Results and Discussion

All the bacterial organisms studied are human pathogens. The activity is compared with standard drug ciprofloxacin at the same concentration. From the experimental data it has been observed that the compounds 3a(i), 3a(iii), 3b(iii), 3d(i), 3c(ii) 3d(ii) and 3e(iv) shows high activity against S. typhi and compounds 3a(ii), 3a(iv), 3b(iv), 3c(iii), 3d(iv), 3e(iv) and 3f(iv) shows moderate activity while remaining compounds are inactive against same pathogen. Similarly compound 3a(i), 3a(iv), 3b(iii), 3b(iv), 3c(ii), 3c(iv), 3d(i), 3d(ii), 3d(iv), 3e(i) and 3e(iv) shows high activity while compound 3c(iii) and 3d(iii) shows moderate activity and remaining compounds shows inactivity against E. coli. In case of Gram-positive bacteria like S. aureus the compound 3a(ii), 3a(iv), 3d(i) and 3b(i), shows highly activity. The compound 3a(ii), 3a(iv), 3b(iii), 3c(ii), 3d(iv) and 3f(iv) were effective against the B subtilis organisms. The compound 3a(iii) and 3b(iv) were effective against the A. aerogenes organisms. As newly s-triazines shows remarkable antimicrobial activity, these compounds can be easily used as alternative drugs for the treatment of various diseases such as typhoide.
Various 1,3,5-thiadiazines derivatives [3a(i) to 3f(iv)] were prepared by the interaction of 1-formamidino-3-thioamido-N-substitutedformamidinothiocarbamides and N-aryl/alkylisocyanodichlorides. All the compounds synthesized were adequately characterized by their elemental analyses and spectral IR, UV and H-NMR. All the synthesized compounds have been assayed for their antibiological activity against both gram-positive and gram-negative human pathogens and found that they possess insecticidal, and bacteriocidal.

**Conclusion**

As outline in synthesis process, important novel thiourea have been synthesized. All the structure of the above compounds was in good agreement with Spectral and Analytical data and also shows novel biological activity.

**References**