

عنوان مقاله:

Synthesis and Biological Potentials of Novel Benzodipyrone-Based Derivatives

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خلاصه مقاله:

In this research, the acetone dicarboxylic acid was prepared from citric acid under the influence of conc. H_2SO_4 . Then, the Pechmann reaction was used to produce a novel benzodipyrone molecule (SY₁). The latter was reacted with a variety of substituted phenols to produce the SY₂-SY₇ congeners. The chemical structures of the synthesized benzodipyrone-based derivatives were recognized by examining the analytically spectral charts. The anticancer, antibacterial, and hypoglycemic potentials of our compounds were assessed in vitro. The initial potential was tested using an IC₅₀ measure versus six tumorigenic cell lines. A broth-dilution test was applied to assess the antimicrobial potential versus six aerobic gram-negative bacteria, four anaerobic bacteria, two fungi, and one non-pathogenic bacterial strain. Furthermore, the hypoglycemic potential was evaluated in comparison to two different types of blood glucose-controlling enzymes, yeast α -glucosidase and porcine α -amylase. The results obtained from investigating the first potential revealed that our compounds, specifically SY₄, had a potent-to-moderate wide-range anti-tumor activity. This activity is combined with a low risk of toxicity to the normal cells. Besides, these compounds exhibited promising antimicrobial potential, particularly SY₅ for aerobic gram-negative bacteria, SY₂ for anaerobic bacteria, and SY₁ for pathogenic fungi. This potential is coupled with the relative safety of our compounds towards the tested normal flora bacteria. Furthermore, the compounds revealed moderate-to-weak inhibitory effects versus the tested blood glucose-controlling enzymes, with SY₂ and SY₃ exhibiting the best hypoglycemic potential. The authors concluded that our synthesized compounds offer privileged bioactive platforms which may liberate a new window for the discovery of the .novel therapeutically active medications

کلمات کلیدی:

Coumarins, Benzodipyrone, Anticancer, Antimicrobial, Antidiabetic

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