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SYNTHESIS AND EVALUATION OF ANTIBACTERIAL AND ANTIOXIDANT ACTIVITY OF NEW DERIVATIVE PYRIDO [1,2-B] [1,2,4] TRIAZEPINE DERIVATIVES

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Pyridine derivatives are an important class of azaheterocycles found in many natural products, active pharmaceuticals and functional materials. Whereas pyridine-derived pharmaceuticals include Atazanavir (Reyataz®) and Imatinib mesylate (Gleevec®), respectively prescribed for human immunodeficiency virus (HIV) and chronic myelogenous leukemia. In particular, some pyridotriazepines derivatives possess diverse bioactivities, such as analgesic, anti-inflammatory, anticancer, antihelminthic, fungicide, and antagonistic activity towards several receptor. In this work, and as part of our ongoing research focusing on developing synthetic routes to heterocyclic derivatives with potential biological activities, we herein report a safe, facile, fast, one-pot reaction and ecofriendly synthesis of a novel substituted 4,8-dioxo-pyrido[1,2-b] [1,2,4] triazepines (3a-l) from epoxides 2. The new proposed synthetic routes seem to be of interest, since they have been compared with existing methods. The synthesized pyridotriazepines are characterized using spectral methods (IR, 1H NMR, 13C NMR and MS), then they were screened at first for their antioxidant activities using DPPH, FRAP and ABTS methods. The results show that the antioxidant properties don't follow the same tendency in all assays, due to the nature of the scavenged radicals and the reaction mechanism. Also, the present study revealed that the nature of the substituent on the phenyl ring is crucial for the exhibited antioxidant activities, and that the increased activities follow systematically the order CH_3>Cl>H. Furthermore the synthesized compounds were also evaluated for their antibacterial activity against four pathogenic bacteria which are *Staphylococcus* sp, *Escherichia coli* sp, *Bacillus* sp and *Enterobacterium* sp. The antibacterial effect was determined using the Muller-Hinton agar diffusion method for bacterial strains. The results shows that these compounds have good inhibitory activity towards the studied pathogenic strains. The minimum inhibitory concentrations are also determined for the samples that were displayed the best antibacterial power.

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