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Senem Akkoc
Süleyman Demirel University, Turkey

Biological activity evaluation of a series of 1-((2,3-dihydrobenzo[b][1,4]dioxin-2-yl)methyl)-3-alkylbenzimidazolium salts

In the past few decades, infections caused by multi-drug resistant bacteria have increased at frightening levels all over the world. Microbial infections are a growing health problem in modern medicine and the use of antibiotics is widespread in the worldwide. In particular, infections caused by the Gram-positive bacterium Staphylococcus aureus and species of the genus Enterococcus have become a major worldwide health problem due to their ability to develop resistance to multiple antibiotics. To overcome these emerging resistance problems, there is an urgent need to discover novel chemotherapeutic agents, which have a broad spectrum of activity and, if possible, with new modes of action. A series of benzimidazolium salts were synthesized and their structures were completely verified by means of elemental analysis, FT-IR, 1D NMR: ^{1}H NMR, ^{13}C NMR. The biological activities of these salts were examined and were found to show moderate activity. The synthesized n-butyl substituted salt displayed the best activity against A. hydrophila, P. aeruginosa, E. coli, S. aureus and L. monocytogenes as Gram +/- microorganisms. The synthesized ethyl substituted salt showed significant activity compared to the other salts against S. typhimurium and Y. enterocolitica. Finally, it could be concluded that nearly all compounds exerted moderate antibacterial activity.

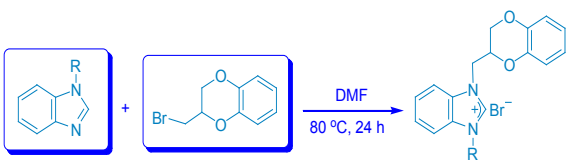

Figure 1: Synthesis of new benzimidazolium salts.

Biography

Senem Akkoç has obtained her Bachelor's Degree from Bülent Ecevit (Zonguldak Karaelmas) University in 2009. She has completed her Master's degree on the synthesis and properties of N-heterocyclic salts at Inonu University in 2012. She has completed her PhD from Erciyes University about in-vitro cytotoxic activity of synthesized benzimidazolium salts. She had been in the University of Sydney (Australia) as a Visiting Scholar from 2015 to 2016. She has published more than 30 papers in reputed journals.

senemakkoc@sdu.edu.tr