

ABSTRACT

SYNTHESIS, CHARACTERIZATION, AND ANTIBACTERIA ACTIVITY OF ORGANOTIN(IV) 3-NITROBENZOATE COMPOUND OF POSITIVE GRAM BACTERIA *Bacillus subtilis*

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The synthesis of diphenyltin(IV) di-3-nitrobenzoate and triphenyltin(IV) 3-nitrobenzoate compounds have been performed resulting the white solid weighing 89.16% and 83.78%, respectively which were synthesized from diphenyltin(IV) oxide and triphenyltin(IV) hydroxide in four hours of the optimum reflux time. The IR spectrophotometry characterization showed the C=O absorption for the compounds at 1617.76 cm^{-1} and 1635.43 cm^{-1} , respectively, indicating the presence of carbonyl group in the synthesized compound. The synthesized compounds were also characterized by spectrophotometer UV-Vis in order to observe their wave length (λ) shift, resulting the electrons transition of $\pi \rightarrow \pi^*$ and $n \rightarrow \pi^*$ which λ_{max} of 210.00 nm and 258.00 nm, respectively as well as 206.00 nm and 251.00 nm, respectively. The microanalysis data obtained by microelemental analyzer showed that the compounds synthesized have been pure with the difference of microanalysis results ranging from 1-1.8 %. The compound synthesized have also been analyzed by spectrophotometry of ^1H and ^{13}C NMR. The antibacterial activity using the diffusion method showed that triphenyltin(IV) 3-nitrobenzoate compound exhibited the best antibacterial activity at concentration of 200 ppm and the result of dilution test on triphenyltin(IV) 3-nitrobenzoate showed a better result at concentration of 0.4 mg/ 2 mL.

Key words: antibacteria, *Bacillus subtilis*, diphenyltin(IV) di-3-nitrobenzoat, synthesis, triphenyltin(IV) 3-nitrobenzoat.