ABSTRACT

SYNTHESIS, CHARACTERIZATION, AND BIOLOGICAL ACTIVITY TEST OF SOME ORGANOTIN(IV) 4–NITROBENZOATE DERIVATIVE COMPOUNDS AS AN ANTIBACTERIAL AGAINST BACTERI *Bacillus sp*.

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In this research, the organotin(IV) 4-nitrobenzoate derivative compounds of diphenyltyn(IV) and dibutyltin(IV) have successfully been synthesized which produced the white solid compounds with percentage yields of 99.17% and 94.91%, respectively. The result of IR spectrophotometer characterization showed that there were absorptions of C=O at 1695.49 cm^{-1} for diphenyltyn(IV) di(4-nitrobenzoate) and 1624.64 cm^{-1} for dibutyltin(IV) di(4-nitrobenzoic). There were absorption of Sn-O, Sn-O-C, and specific absorption N-O for those compounds synthesized which indicated that the initial compound successfully reacted with 4-nitrobenzoic acid ligands. The characterization by UV-Vis spectrophotometer have also been performed and the electron transitions observed were $\pi \rightarrow \pi^*$ and $n \rightarrow \pi^*$ at λ_{max} of 204.00 nm and 268.00 nm for diphenyltyn(IV) di(4-nitrobenzoate) and 204.00 nm and 266.00 nm dibutyltin (IV) di(4-nitrobenzoate). The result of ^{1}H dan ^{13}C *NMR* characterization for dibutyltin(IV) di(4-nitrobenzoate) compound showed that there were chemical shifts of benzoic groups at 7.7 ppm and a carbonyl group at 162 ppm, whereas for diphenyltyn(IV) di(4-nitrobenzoate) showed that there were chemical shift of benzoic groups in 7.79 ppm and a carbonyl group in 165 ppm. The microanalysis data using microelemental analyzer showed that the compound synthesized were quite pure where the difference between theorytical calculation and microanalysis result was < 1%. The Activity antibacterial test by diffusion method showed that the highest activity was shown by diphenyltyn(IV) di(4-nitrobenzoate) at concentration of 200 ppm, while the result of dilution test indicated that the diphenyltyn(IV) di(4-nitrobenzoate) compound was effective at concentration of 0.4 mg/2 mL.