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Table of Contents

KP-8

The Use of Some Organotin(IV) as Candidate for Disinfectant

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The interest in organotin(IV) carboxylates and their derivatives continues to attract many chemists as these compounds are very active and have strong biological activity [1] and they have been tested as anticancer [2,3], antimalarial [4], antibacterial [5], antifungi [6] and anti-oxidants [7]. In our previous work, the synthesis and some activity studies of organotin(IV) benzoates were reported [3-6]. In this work, we reported the potential use of some diphenyltin(IV) benzoate derivatives as disinfectant. Two bacteria, a gram-positive *Staphylococcus aereus* and a gram-negative *Salmonella* sp. were used *in vitro* in the disinfectant test with concentration variations of $5x10^{-3}$, $1x10^{-3}$ and $5x10^{-4}$ M and contact time of 5, 10 and 15 min were performed using a control positive of a strong and common commercial disinfectant available in the market. The disinfectant activity was determined by measuring their optical density using UV-Vis spectrophotometer at λ_{max} 600 nm. The results indicated that the eight diphenyltin(IV) benzoate derivatives synthesized showed much stronger disinfectant activity compared to the control positive as shown by a bigger decrease of their absorbance in the UV-Vis. Therefore, these diphenyltin(IV) benzoate compounds have the potential to be used as future disinfectant.

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P-50

Antibacterial, Anti-Oxidant and Cytotoxic Activities of the Stem Bark of *Archidendron jiringa* (Jack) I. C. Nielsen

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Archidendron jiringa (Jack) I. C. Nielsen is a species of the genus *Archidendron*, including the Fabaceae family which is known as *Jengkol*. *Jengkol* contains secondary metabolites that exhibited biological activities, such as antibacterial, antifungal, anticancer and anti-oxidant properties. This study has been carried out on extraction and fractionation of *A. jiringa* stem bark and tested the antibacterial, cytotoxic and anti-oxidant activity of the extract and fraction of *jengkol* stembark. Extraction and fractionation are conducted in several steps, including sample preparation, maceration and fractionation using vacuum liquid chromatography and column chromatography. The results of bioactivities tested performed that among three extracts obtained, ethyl acetate extract showed the most activity against *B. subtilis* and *E. coli* by using disc diffusion method. In addition, the toxicity screening displayed that all tested extracts and fractions were toxic with the LC_{50} values ranging of 250–750 ppm. Furthermore, all extracts and fractions showed good anti-oxidant activity with the IC_{50} values ranging of 0.740–7.203 ppm.

The Cytotoxic and Antibacterial Assays of Artonin E Isolated from the Branch Bark of the *Artocarpus kemando* Miq.

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Artocarpus kemando Miq. is one of Indonesia's endemic plants which is rich in flavonoid compounds and has a lot of bioactivity. From the branch bark of this plant obtained from Karang Anyar, Klaten, Penengah, South Lampung, Indonesia, a flavonoid compound, artonin E was isolated. This compound was identified by TLC using standard compounds, and its UV-Vis and IR spectra were compared with literature data. Cytotoxic test using leukemia cells P-388, the isolated artonin E showed strong anticancer activity with IC_{50} of 1.56 µg/mL, whereas in the antibacterial test against *Bacillus subtilis* and *Escherichia coli*, this compound showed a moderate antibacterial activity.

P-83

The Stability Increase of α-Amylase Enzyme from *Aspergillus fumigatus* Using Dimetyladipimidate

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This study aims to increase the stability of the α-amylase enzyme from *Aspergillus fumigatus* using dimethyladipimidate (DMA). The research stages carried out included production, isolation, purification, modification and characterization of native enzyme and after the addition of DMA. The enzyme activity was determined by the Fuwa and Mandels method, while the protein content was determined by the Lowry method. The results showed that the native enzyme has a specific activity of 7010.42 U/mg, an increase of 7.8 times compared to the crude extract of the enzyme which has a specific activity of 904.38 U/mg. The native enzyme has an optimum pH of 5 and an optimum temperature at 55 ºC. The native enzyme has a residual activity of 17.17% after incubation for 60 minutes at 55 ºC, and a half-life of 25.86 min. Enzymes after addition of DMA with a concentration of 0.5, 1 and 1.5% has an optimum pH of 5.5 and an optimum temperature of 65 ºC. After incubation for 60 minutes at 65 ºC, these modified enzymes have residual activity of 54.17, 46.18 and 34.44%, half-lives of 85.55, 58.25 and 37.46 minutes, respectively. The addition of DMA to the native α-amylase obtained from *A. fumigatus* was able to increase the stability of the modified enzymes between 1.5 and 3.3 times compared to the native enzyme as indicated by the increase in their half-lives.