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Sintesis dan Aktivitas Antioksidan Derivat Senyawa Tiazol Berbahan Baku Sinamaldehida = Utilization of Cinnamaldehyde for The Synthesis of Thiazole Derivatives and Bioactivity Test as Antioxidant

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Abstrak

Senyawa derivat tiazol berbasis isatin ini telah banyak diteliti memiliki berbagai bioaktivitas, seperti antioksidan, antimikroba, antikanker, antivirus, dan antituberkulosis. Sintesis derivat senyawa isatin tiazol pada penelitian ini dilakukan dengan mereaksikan senyawa derivat tiazol, dengan variasi aldehid aromatik berupa sinamaldehida, benzaldehida, dan 4-hidroksi benzaldehida melalui pembentukan intermediet berupa Isatin Thiosemicarbazone. Hasil sintesis senyawa Isatin Tiazolidin-4-on Sinamaldehida menghasilkan nilai persen yield sebesar 46,73%, senyawa Isatin Tiazolidin-4-on 4-Hidroksi Benzaldehida menghasilkan persen yield sebesar 34,58%, dan untuk senyawa Isatin Tiazolidin-4-on Benzaldehida menghasilkan persen yield sebesar 34,27%. Keberhasilan sintesis pembentukkan senyawa derivat isatin tiazol dibuktikan dengan identifikasi kromatografi lapis tipis serta karakterisasi berdasarkan UV-Vis, FTIR, dan LC-MS. Hasil dari pengujian aktivitas antioksidan dengan metode DPPH pada senyawa yang dihasilkan mendapatkan nilai IC50 untuk senyawa Isatin Tiazolidin-4-on Sinamaldehida sebesar 1686,70 ppm, Isatin Tiazolidin-4-on 4-Hidroksi Benzaldehida sebesar 1580,85 ppm, dan Isatin Tiazolidin-4-on Benzaldehida memperoleh nilai sebesar 1900,48 ppm.

.....Isatin-based thiazole derivative compound has been several studied for its various bioactivities, such as antioxidant, antimicrobial, anticancer, antiviral, and antituberculosis. Synthesis of isatin thiazole derivatives in this study, thiazole will be reacted with a variety of aromatic aldehydes such as cinnamaldehyde, benzaldehyde, and 4-hydroxy benzaldehyde through the formation of an intermediate in the form of Isatin Thiosemicarbazone. The %yield obtained from Isatin Thiazolidine-4-one Cinnamaldehyde compounds was 46.73%, Isatin Thiazolidin-4-on 4-Hydroxy Benzaldehyde compound was 34.58%, and for Isatin Thiazolidine-4-one Benzaldehyde compounds produced 34.27%. The product of thiazole isatin derivatives was proven by identification of thin layer chromatography and characterization based on UV-Vis, FTIR, and LC-MS. The results of testing the antioxidant activity with the DPPH method on the resulting compound obtained IC50 values for Isatin Thiazolidine-4-one Cinnamaldehyde was 1686.70 ppm, Isatin Thiazolidine-4-one 4-Hydroxy Benzaldehyde was 1580.85 ppm, and Isatin Thiazolidine- 4-on Benzaldehyde obtained IC50 value 1900.48 ppm.