SYNTHESIS OF 4-CHLOROBENZOYLTHIOUREA FROM 4-CHLOROBENZOYL CHLORIDE AND THIOUREA WITH DIFFERENT HEATING TIME AND TEMPERATURE

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Abstract

To find new compounds acting on central nervous system (CNS), the research of structure modification of benzoylthiourea (4-chlorobenzoylthiourea) uses the Topliss approach model by acylating the thiourea with derivated benzyol chloride. These compounds have higher lipophilic and electronic properties compared to the lead compound benzoylthiourea, with the expectation of the increase of the central nervous system depressant. 4-chlorobenzoylthiourea had been made by reacting 4-chlorobenzoyl chloride with thiourea in tetrahydrofuran. The heating temperatures were 90°C, 100°C, 110°C and 120°C with the percentage yields of 28.99%, 41.07%, 48.79% and 45.14%. The highest percentage yield of 4-chlorobenzoylthiourea was given at 110°C. The heating time was 0.5 hours; 1 hours; 1.5 hours and 2 hours with the percentage of the product of 4-chlorobenzoylthiourea compound were 41.65%; 50.84%; 46.39%; 43.18%. The highest percentage yield of 4-chlorobenzoylthiourea was obtained 1 hour of heating time. The purity test of the synthesis product was shown by the single spot on the Thin Layer Chromatogram (TLC) and small difference of melting point. Characterization of the products of the synthesis was based on the analysis with Ultraviolet (UV) and Infra Red (IR) spectrophotometer, 1H-NMR spectrometer and gas chromatography mass spectrometer (GC-MS), it was concluded that the structure of the synthesis product were in accordance to the prediction.

Keyword: 4-chlorobenzoylthiourea, synthesis, heating time, heating temperature.