ABSTRACT

The Influence of The Temperature to The Synthesis of *N*-acetyl-*N*' benzoylthourea from Acetylation of *N*-benzoiltiourea

To obtain *N*-acetyl-*N*'-benzoylthiourea, which is expected to have activity as central nervous system depressant better than *N*-benzoylthiourea, reaction between *N*-benzoylthiourea and acetyl chloride was carried out in toluene under pyridine base for 4 hours at two different temperatures (0^{o}C and 31^{o}C). The

starting material, *N*-benzoylthiourea, was prepared by reaction of thiourea and benzoyl chloride in toluene to provide yellowish crystals in 36,6% yield after recrystallization using ethanol 70%.

The reaction between *N*-benzoylthiourea and acetyl chloride gave colorless solid product, which was identified using UV-Vis and IR spectrophotometry, as well as NMR and mass spectrometry. Unfortunately, the resulted product was not the expected target molecule but it was *N*-acetylthiourea. Though the mechanism occurred during the reaction that yield *N*-acetylthiourea was not fully understood, we suggest that the reactive acetyl group replaced the benzoyl group of *N*benzoylthiourea because attack at its NH_2 group was hard to occur due to the low nucleophilicity under the reaction condition.

Keywords:

N-acetyl-*N*'-benzoylthiourea, *N*-acetylthiourea, acetylation, benzoyl chloride, N-benzoylthiourea, pyridine, temperature, thiourea.