ABSTRACT
Synthesis of 4-acetamidophenyl acetate and Its Analgesic Activity Assay in Mice (*Mus musculus*)

Anindi Lupita Nasyanka

Nowadays most people in the world use analgesics as treatment for pain. Paracetamol is the most frequently used analgesic drug in Indonesia, however it's still need to be developed optimally. 4-Acetamidophenyl acetate, a new analgesic drug, was acquired from the lead compound N-acethyl-p-aminophenol (paracetamol) and its development had been done by *in silico* assay, synthesis, and analgesic activity assay. Firstly, the compound was tested by *in silico* assay with cyclooxygenase-2 receptor (3LN1) to analyze its re-rank scoreenergy. It has lower re-rank score (-80,1473) than paracetamol (-68,5412) which indicates its low bond energy so it's more stable in drug-receptor interaction, and its predicted the compound has analgesic activity higher than paracetamol. Then, the compound was synthetized by reacting paracetamol with acethyl chloride through Schotten-Baümann acylation reaction principle. Percent yield of this product was 47% and its purity was analyzed by melting range test and thin layer chromatography. The structure of the compound was confirmed by UV spectrophotometer, infrared spectrophotometer, and nuclear magnetic resonance spectrometer. At last, its analgesic activity was assayed by hot plate method with paracetamol as the reference drug. The test compound was administered orally to mice with dose of 100 mg/body weight. The 4-acetamidophenyl acetate has 37,73% maximum possible effect which shows that it has similar ($p>0,05$) analgesic activity with paracetamol (33,22%). However, 4-acetamidophenyl acetate has longer duration of action compare with paracetamol.

Keywords: ***in silico assay, 4-acetamidophenyl acetate, synthesis, analgesic activity***