ABSTRACT

DELIGNIFICATION EFFECT ON THE YIELD OF FURFURAL ON ACID HYDROLYSIS OF OIL PALM EMPTY FRUIT BUNCHES (OPEFB)

By

Mardiyah

In this research, the process of delignification and hydrolysis of Oil Palm Empty Fruit Bunches (OPEFB) powder was done. Delignification carried out using sodium hydroxide (NaOH) (1%, 3%, and 5% (w/v)) were soaked for 24 and 48 hours. Hydrolysis process using OPEFB without delignification and OPEFB with delignification with various concentration of sulfuric acid (H₂SO₄) (0%; 1%; and 5% (v/v)), various temperature (80, 90, and 100°C), and various time (30, 45, 60, and 90 minute) to obtain the optimum yield of furfural. Identification furfural using color test with aniline-acetate, spectrophotometer UV-Vis and FT-IR also using GC-MS. The highest furfural produced by OPEFB without delignification and OPEFB with delignification using NaOH 3% were soaked for 48 hours at optimum hydrolysis condition with concentration of H₂SO₄ 5%, temperature 100°C, and for 60 minutes, respectively 0.3132 dan 0.4932 (mg/mL) with respective yield of 20,32% dan 32,42%. The color test showed positive result with the formation of red color. The maximum wavelength of UV-Vis spectrophotometry is (λₘₐₓ) 273.5 nm and vibrational number of wavelengths corresponding to the theory and standard furfural in FTIR spectrophotometry and also molecular ion peak at m/z 96 which is the molecular weight of furfural on GC-MS analysis.

Keyword : Oil Palm Empty Fruit Bunches (OPEFB), Delignification, Acid Hydrolysis, Furfural.