ABSTACT

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

By

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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 (H_2SO_4) (0%; 1%; and 5% (v/v)), various temperature (80, 90, and 100^oC), 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 concetration of H_2SO_4 5%, temperature 100^oC, 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 (λ_{maks}) 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.