ABSTRACT

Sweet water is a by-product of the fatty acid splitting process that still contains impurities such as Fatty Acid Ester (FAE), which require further purification. One effective method is the addition of filter aid as a supporting medium during filtration. This study aims to analyze the effect of filter aid dosage on reducing FAE content and to determine the optimal dose that meets the company's quality standard (≤ 0.5%).The research was conducted at PT. Unilever Oleochemical Indonesia using a one-factor completely randomized design with three filter aid dosages: 10 kg, 20 kg, and 30 kg. Data were collected over seven days with a total of 21 observations. Results showed that increasing the filter aid dosage significantly improved FAE removal. The average FAE reduction was 0.5338% (10 kg), 1.3360% (20 kg), and 1.8115% (30 kg). Only the 30 kg dosage succeeded in lowering the final FAE content to 0.4901%, meeting the internal quality threshold.ANOVA analysis confirmed a significant difference between treatments ($p < 0.05$), and regression analysis showed a strong correlation between dosage and FAE reduction ($R^2 = 0.988$). Therefore, a 30 kg filter aid dosage is recommended as the optimal condition for sweet water purification.

*Keywords**:** Sweet water, Fatty Acid Ester, filter aid, filtration, purification.*