

Recovery of residual crude palm oil (RCPO) from oil palm decanter cake (OPDC) using D-limonene

ABSTRACT

In this study, d-limonene as green solvent was used as an alternative to n-hexane to recover the residual crude palm oil (RCPO) from the OPDC. The OPDC obtained from the palm oil mill contained about $12.55\pm 3.15\%$ (dry basis) of RCPO. Similar as n-hexane, the results proved that d-limonene as solvent was able to recover 100% of the RCPO from the OPDC successfully. The recyclable of d-limonene was 90%, higher than n-hexane (70%) and not much variation on fatty acids composition of extracted RCPO were observed. To ensure complete RCPO recovery, microscopic observation and FTIR spectra analysis on OPDC before and after the extraction were performed. This study concludes that d-limonene is comparable to n-hexane. However, the residual oil is classified as non-edible as it is not extracted via mechanical method. Therefore, further analysis is necessary in order to determine the potential use of the residual oils in other industries such as pharmaceutical, food packaging, fiberboard manufacturing and others.

Keyword: D-Limonene; Green solvent; Oil extraction; Oil palm decanter cake; Oil recovery; Residual crude palm oil