NMR analysis

Results and discussion section

Figure S1 shows ^{1}H-NMR and ^{13}C-NMR spectra of palm oil. The peaks at 0.87 and 1.25 ppm in ^{1}H-NMR spectrum (Figure S1a) correspond to the terminal methyl groups (-CH_3) and methylene groups (-CH_2-) of fatty acid chains. The protons attached with carbon 3, -CO-CH_2-CH_2- was featured at 1.62 ppm[1]. The allylic protons of the fatty acid chain, -CH_2-CH= were appeared at 2.01 ppm[2] and the protons of the carbon next to the ester linkages, -CO-CH_2- appeared at 2.32 ppm. Moreover, peaks at 4.12-4.32 and 5.26-5.50 ppm are related to the protons of -CH_2- groups in glyceride unit and unsaturated carbon (-CH=CH-), respectively. In the ^{13}C-NMR (Figure S1b), the carbonyl groups (-CO-) of the ester (palm oil) appeared at 173.10 ppm, whereas, the carbon–carbon double bonds (-C=C-) of the oleic acid can be seen at 125–135 ppm. The glyceride carbons present in -CH_2- groups and central carbon can be observed at 62.1 and 68.9 ppm, respectively. In addition, peaks at 20-40 and 14.3 ppm correspond to the -CH_2- groups and the terminal -CH_3 groups of fatty acid carbon[1].

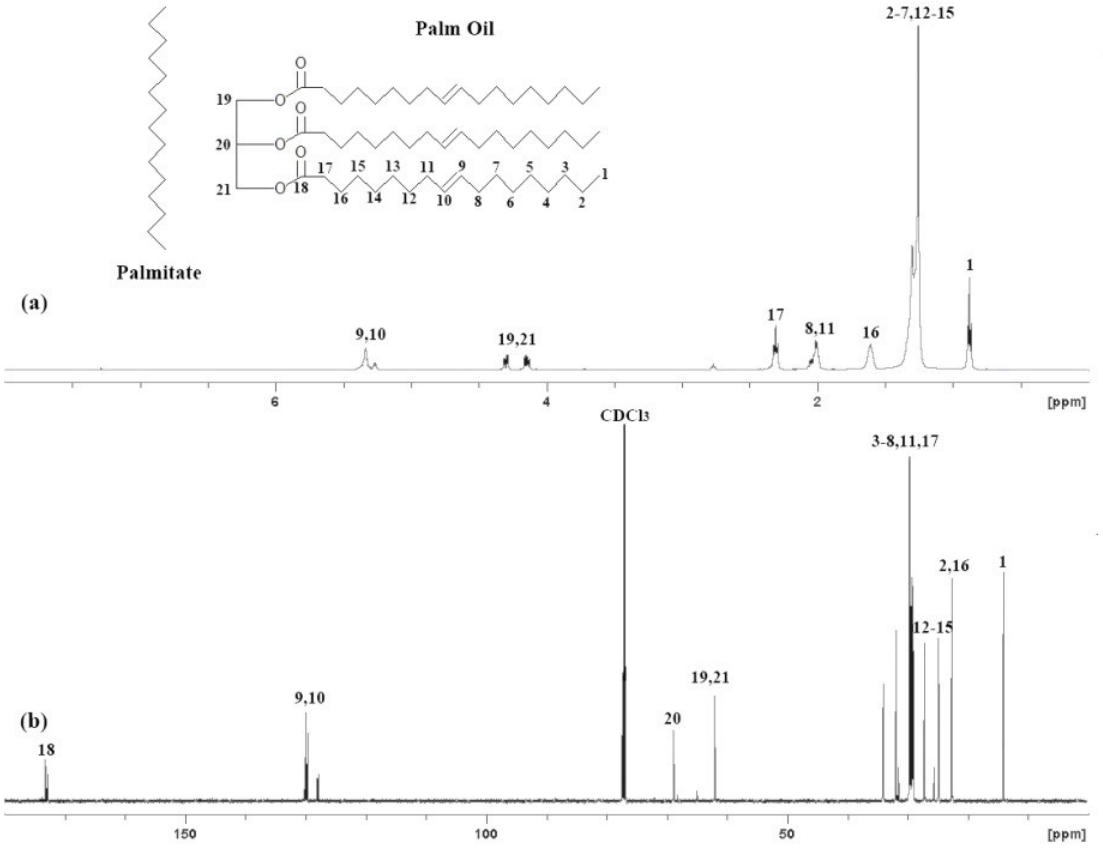

Fig. S1 ^{1}H-NMR (a) and ^{13}C-NMR (b) of palm oil.

References

1. T. E. Odetoye, D. S. Ogunniyi and G. A. Olatunji, *Ind. Crops Prod.*, 2010, 32, 225-230.
2. A. Spyros, *J. Appl. Polym. Sci.*, 2003, 88, 1881-1888.