Supplementary Information (SI) for RSC Advances.

Tracking Trash to Treasure: *In situ* monitoring of Single Microbial Cell Oil biosynthesis from Waste Cooking Oil using Raman Spectroscopy and Imaging

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Supplementary Information:

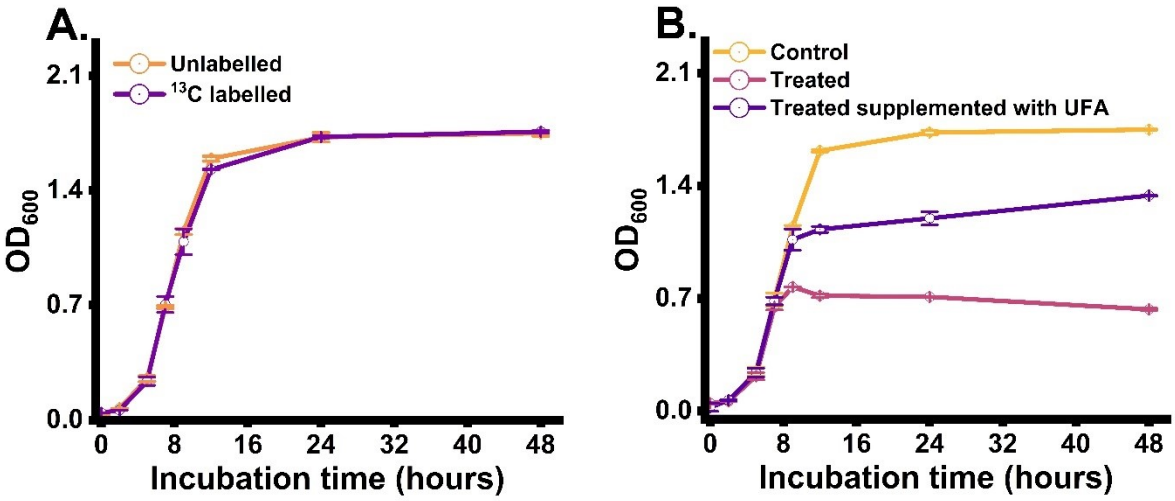

Fig. S1 Growth monitoring of *Yarrowia Lipolytica* (A) YL grown in carbon source-free synthetic medium with unlabelled glucose and ^{13}C labelled glucose as the sole carbon source supplement. (B) YL grown in culture medium without cerulenin treatment, with cerulenin treatment at 8 h and cerulenin treated medium with exogenous UFA.

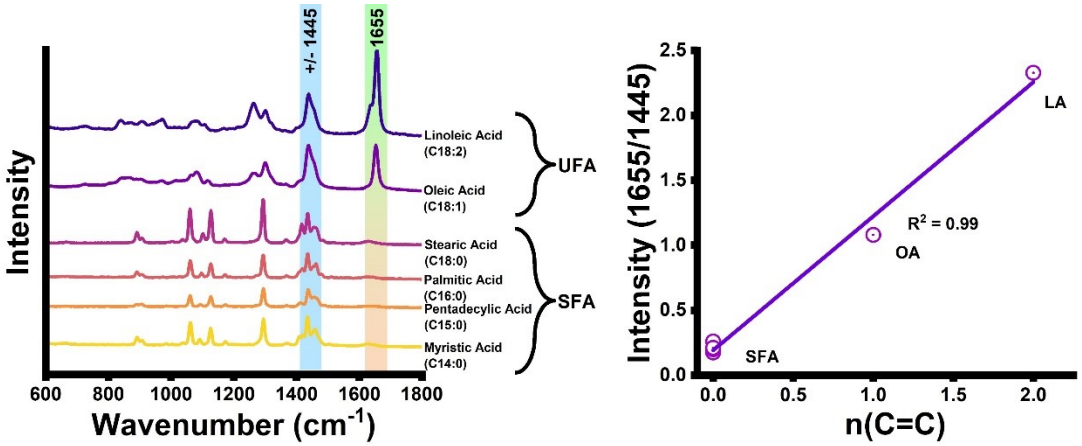

Fig. S2 Raman analysis of standard SFA and UFA. A. Raman spectra of fatty acid B. Quantifying degree of unsaturation from Raman spectra by plotting the ratiometric Raman intensity (1655/1445) to the number of C=C. SFA = Saturated fatty Acid; UFA = Unsaturated Fatty Acid; OA = Oleic Acid; LA = Linoleic Acid.

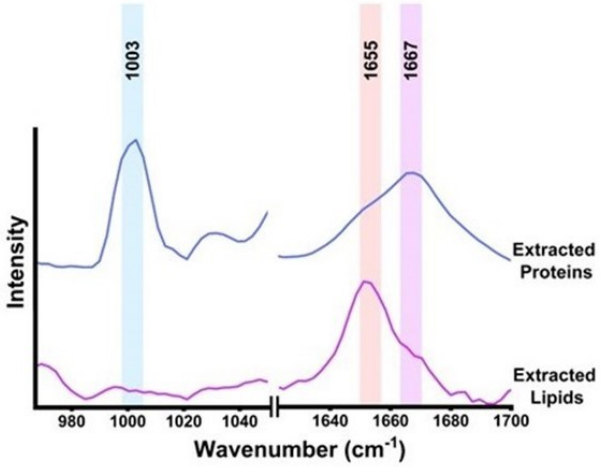

Fig. S3 Reference peak positions from extracted protein and lipid from cells after 24 h.

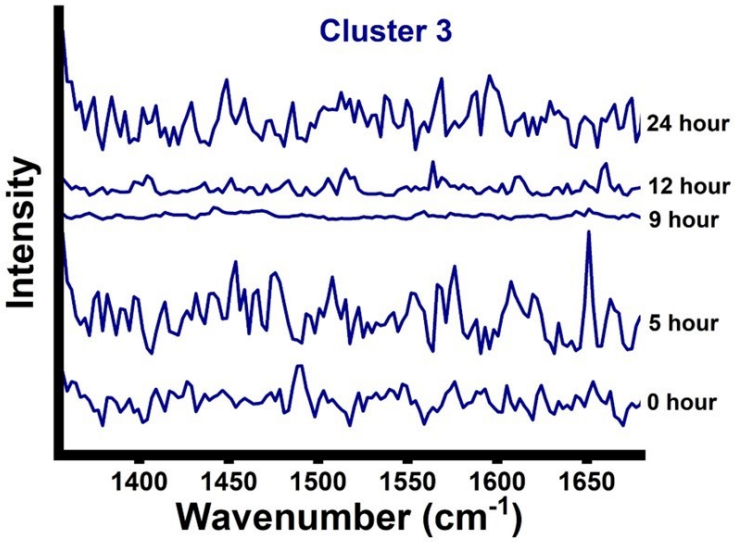

Fig. S4 K- means cluster component 3 of different time points.

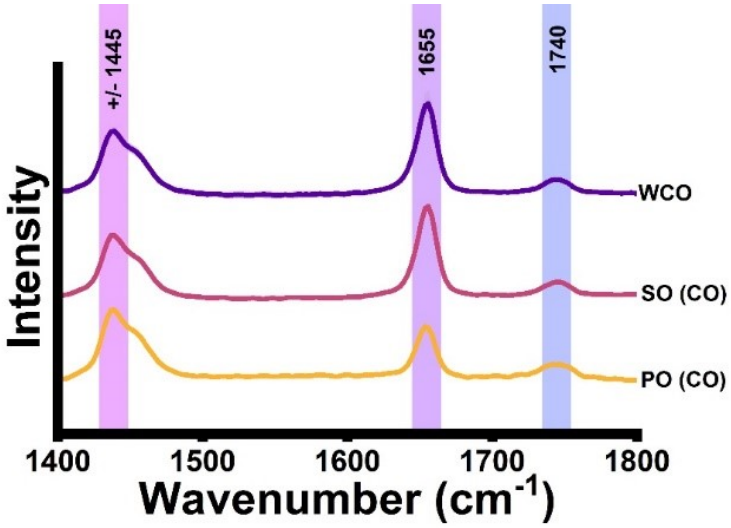

Fig. S5 Raman spectra of Oils used as only carbon source; Cooking Oil (CO) - Palmolein Oil (PO) and Sunflower Oil (SO) and Waste cooking oil (WCO).

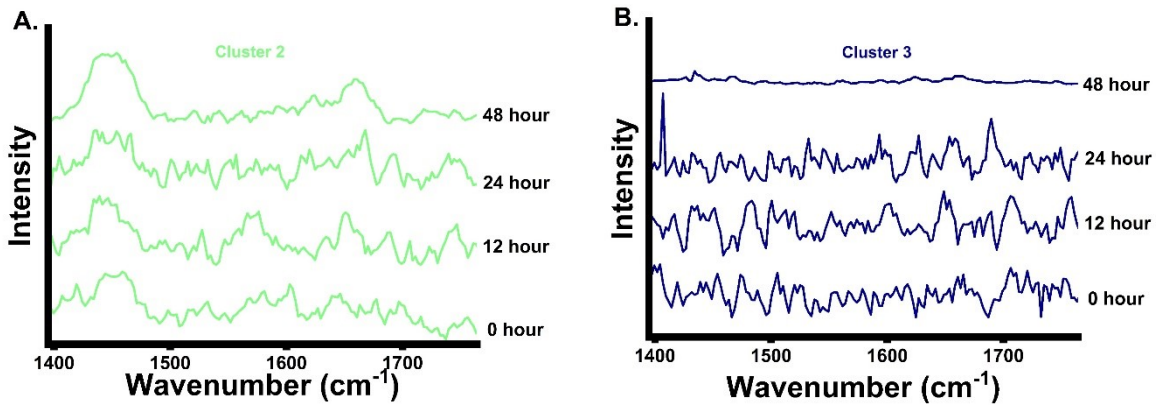

Fig. S6 K- means cluster components of different time points; (A) Cluster 2 (B) Cluster 3