**Analysis on chemical components of biocomposites used in ecotoxicity assessment**

To create a profile of the organic chemical component of tested biocomposites, thermal extractions following a non-target screening were performed for both pristine and seawater-aged biocomposites, using Gas Chromatography Mass Spectrometry (GC-MS). Plastic specimens cut into 1 x 1 cm flakes were heated to 120 °C for 30 s in a glass tube and under an inert gas stream. The gas stream is then passed over a tube filled where the volatile organic components (VOCs) are retained. The tube containing VOC was then thermally desorbed. The VOC are cryogenically stepped and injected into a GC-MS (Thermo Scientific TSQ 8000 EVO).

The identified major compounds for both pristine and seawater-aged biocomposites were summarised (Table S1). 1-Dodecnaol (112-53-8), lactide (95-96-5) and palmitic acid (57-10-3) were detected in both PLA and Flax-PLA biocomposites. It should be notice that no internal standards for above identified were spiked with samples, thus quantitative information of these compounds in each biocomposite remains unknown.

Table S1. Qualitative summary of identified major compounds in biocomposites.

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| Biocomposites | Treatment | Identified major compounds (CASa) |
| PLA | Pristine | 1-Dodecnaol (112-53-8), lactic acid (50-21-5), lactide (95-96-5), palmitic acid (57-10-3) |
| Seawater-aged | n-Octadecane (593-45-3), 1-Dodecnaol (112-53-8), lactic acid (50-21-5), lactide (95-96-5), palmitic acid (57-10-3), acetaldehyde (75-07-0) |
| Flax-PLA | Pristine | Lactide (95-96-5), 1-Dodecanol (112-53-8), palmitic acid (57-10-3), caprolactam (105-60-2) |
| Seawater-aged | 1-Dodecanol (112-53-8), lactide (95-96-5), palmitic acid (57-10-3), lactic acid (50-21-5), nonanoic acid (112-05-0) |

a: Values are selected from the European Chemical Agency (ECHA)'s REACH registered substance factsheets. Further information can be found at https://echa.europa.eu/information-on-chemicals/registered-substances.