Electronic Supplementary Material (ESI) for Green Chemistry.

Two-step bioproduction of functional polyhydroxyalkanoates

Electronic Supplementary Information

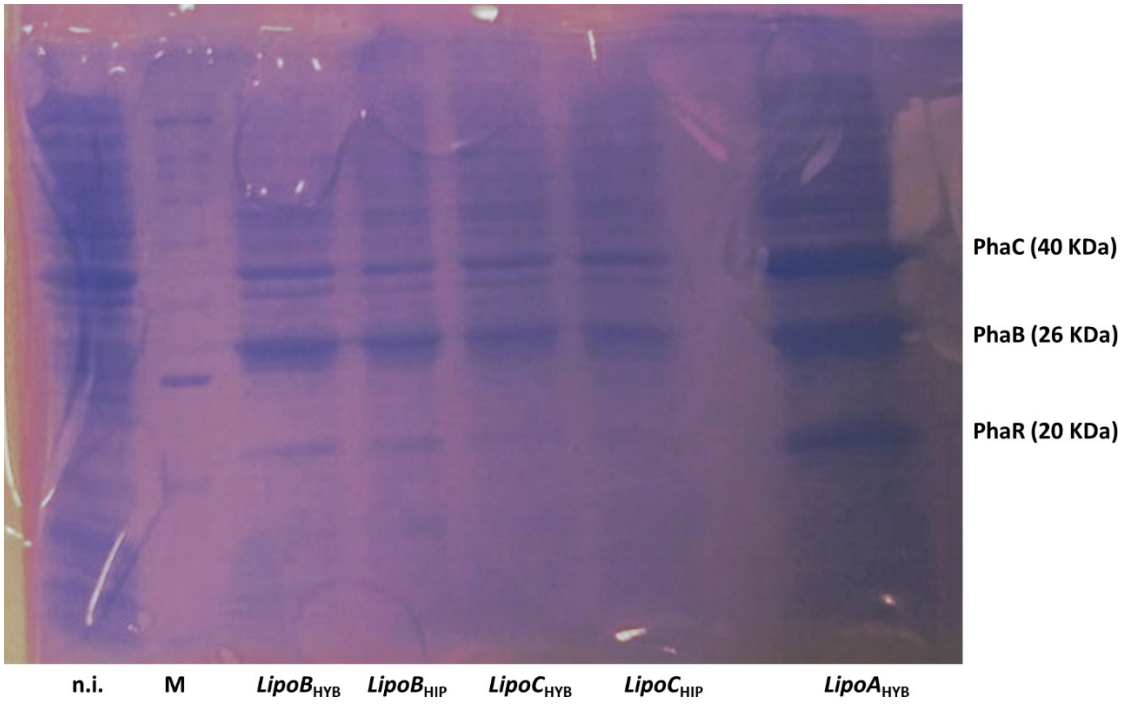

Fig. S1 SDS-PAGE of cell extract of *LipoB* (for *tac* based systems) and *LipoA*.

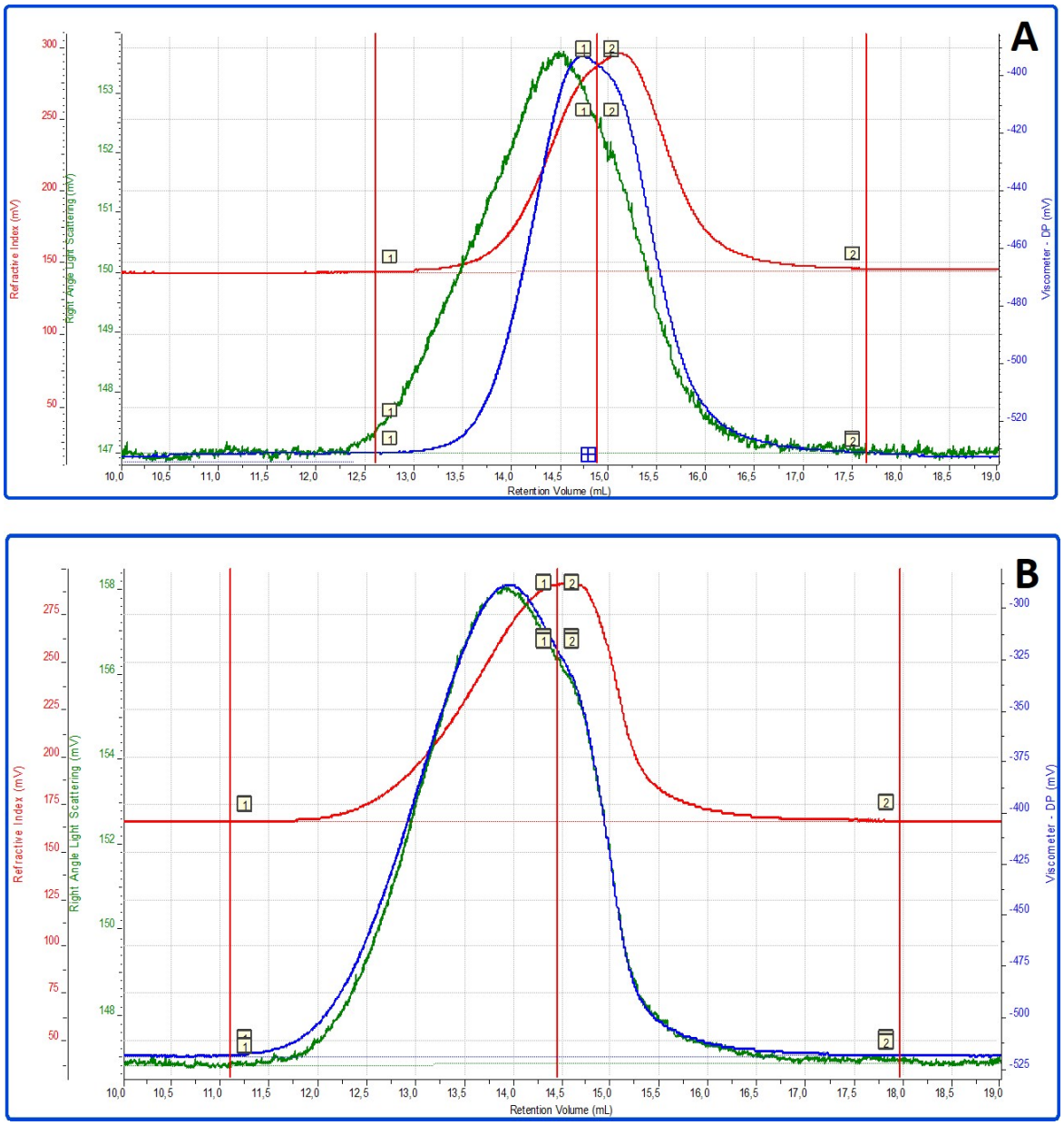

Fig. S2 GPC chromatograms of *LipoB-HYB* polymer (**A**) and *LipoB-HIP* (**B**) polymer.

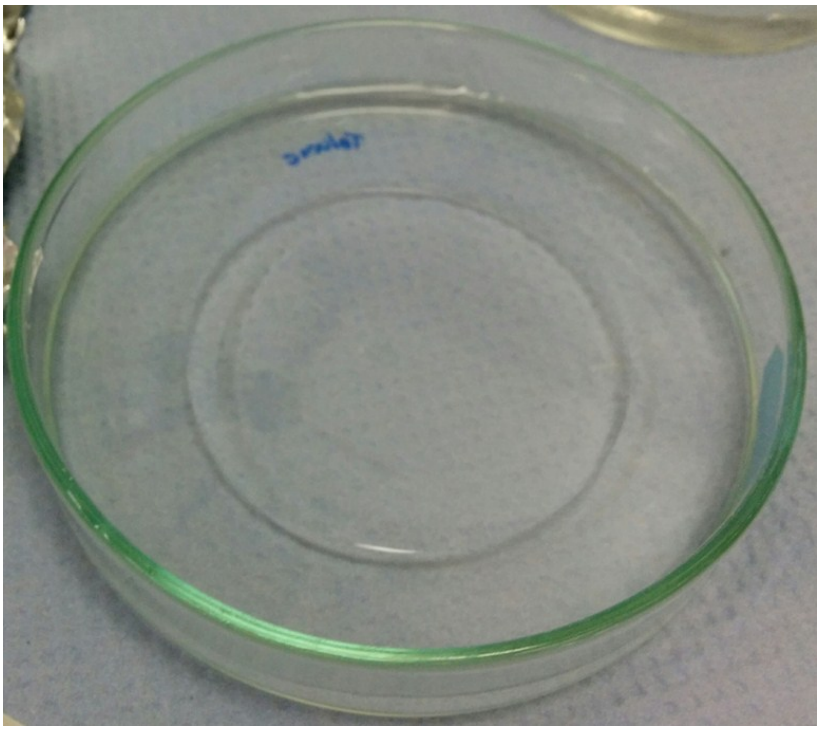

Fig. S3 Film forming toluene solution floating on water surface.

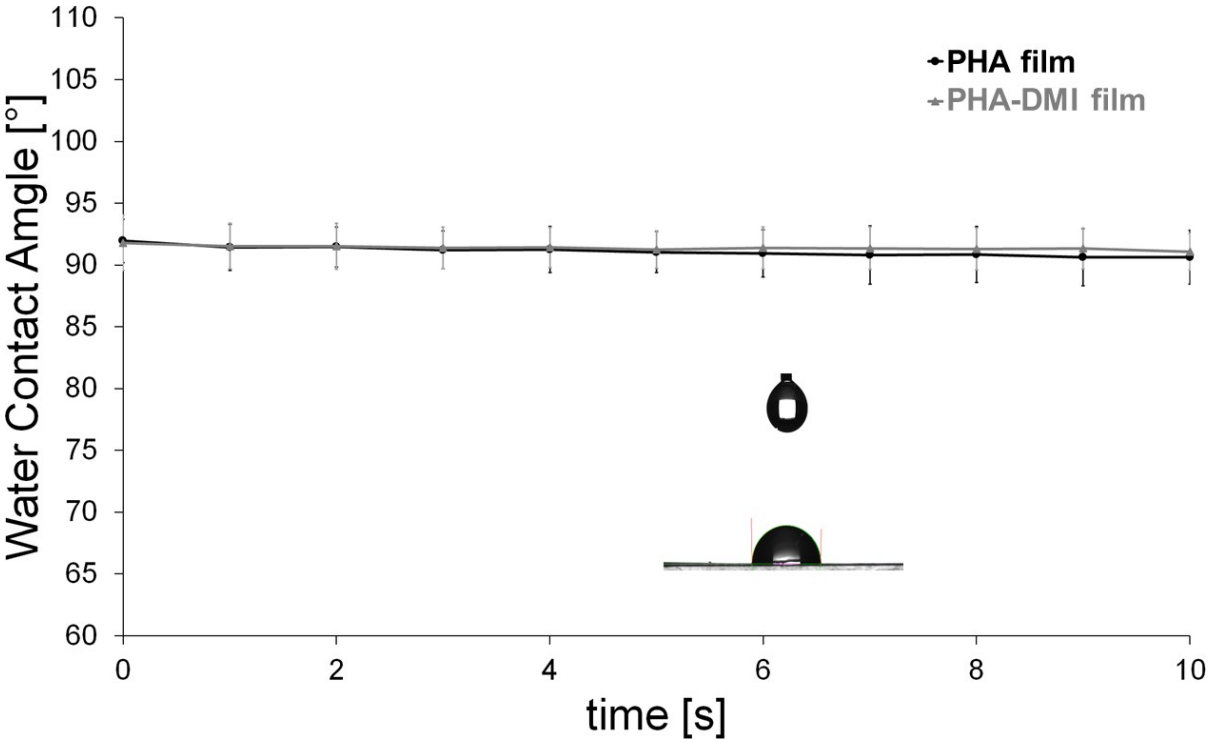

Fig. S4 WCA analysis of PHA (black line) and PHA-DMI_1 (grey line) films. Frame at deposition time of water drop on PHA film was reported in picture.

Fig. S5 Oil-adsorbing properties of PHBHHx film. On the top film treated with olive oil. After 5 minutes the oil drop was completely adsorbed by the film which became shiny while on the bottom, far from the oil drop the film is still opaque.

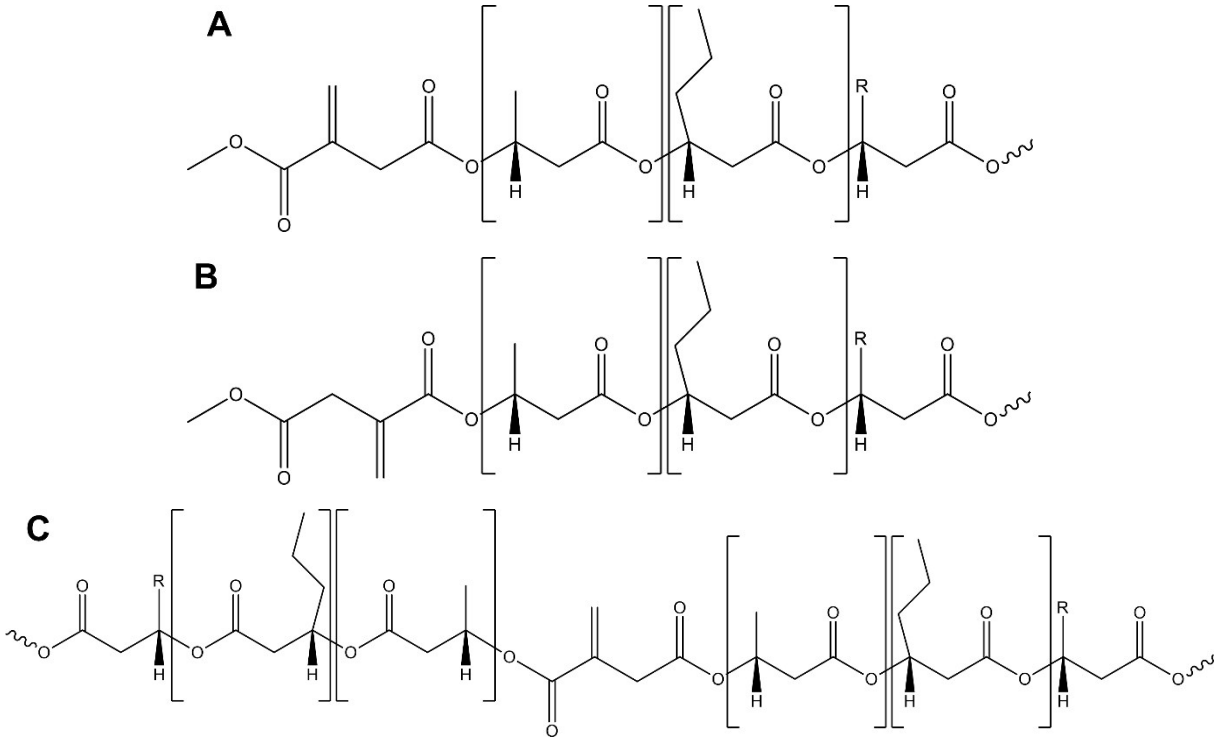

Fig. S6 Structures of the products of PHA-DMI1 reaction: **A**: PHA capped with DMI reacted with "*fast*" carbon moiety; **B**: PHA capped with DMI reacted with "*slow*" carbon moiety; **C**: PHA dimeric species.

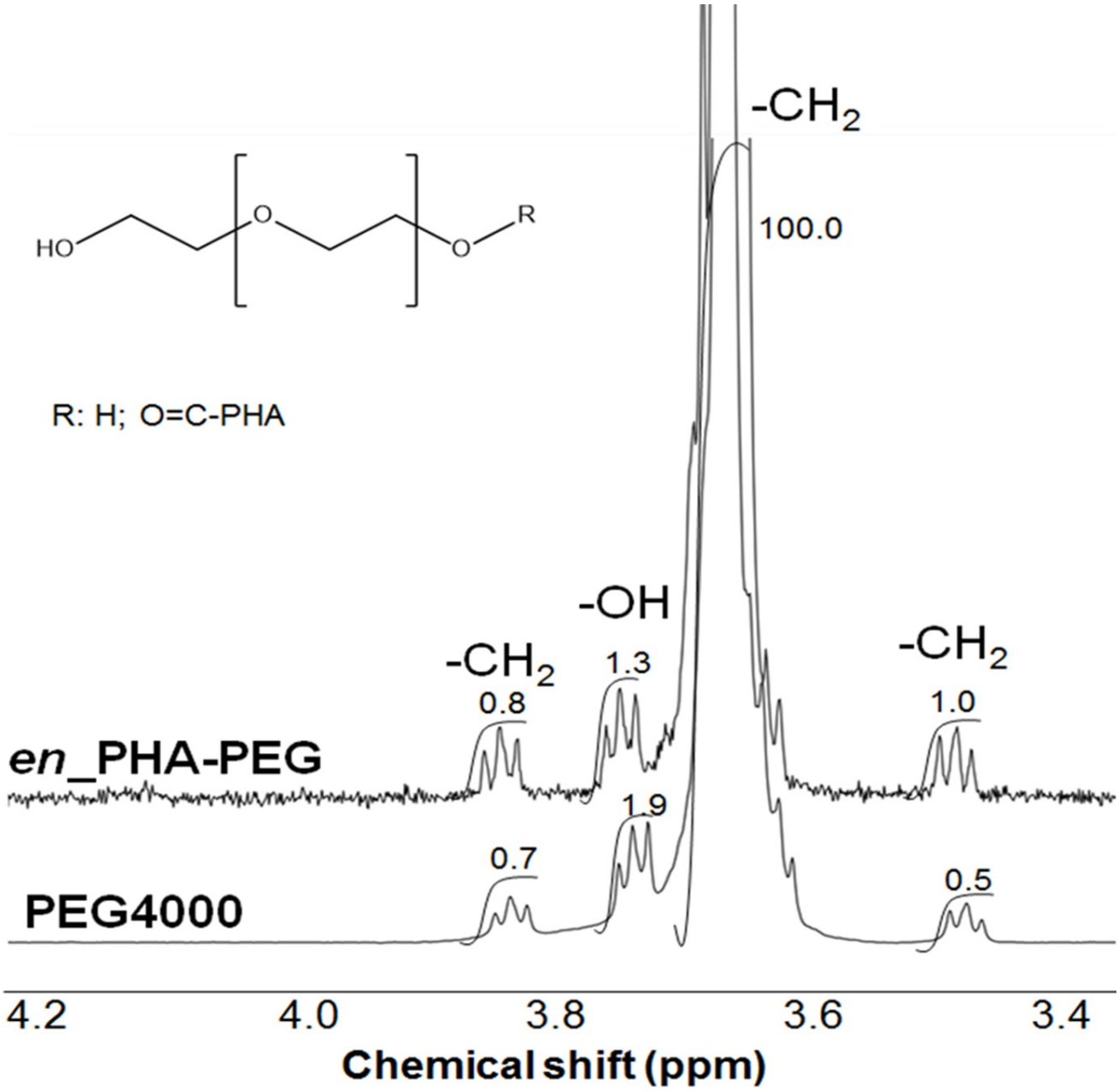

Fig. S7 Enlarged ^{1}H-NMR spectrum of PHA-PEG and PEG4000. *en*_PHA-PEG: product enriched by a purification step aimed to remove most of unreacted PEG 4,000. Integration of main peak of polyether backbone was set at 100 for both samples.

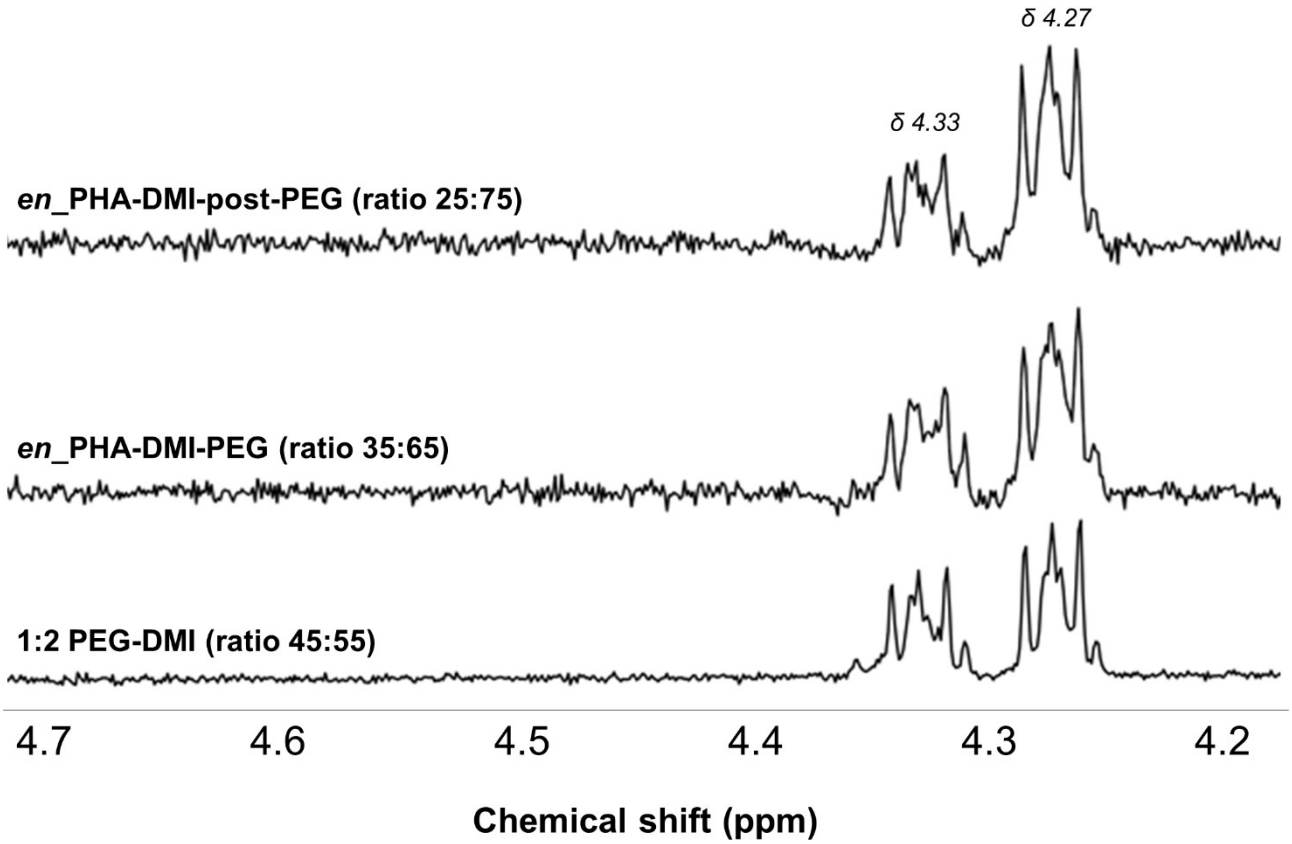

Fig. S8 ^{1}H-NMR spectra in ester region of 1:2 PEG-DMI, *en*_PHA-DMI-PEG and *en*_PHA-DMI-post-PEG. Both PHA derivates were enriched by a purification step aimed to remove most of unreacted PEG 4,000. In brackets are reported the ratios between the integration of the two ester signals at 4.33 and 4.27 ppm respectively.