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Characterization of the inclusion complexes between cyclodextrins and aliphatic polyesters.

α -CD-PEA (1000). Yield: 71%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.46 (m, 12H, O(2)H and O(3)H of α -CD), 4.80 (d, 6H, C(1)H of α -CD), 4.45 (t, 6H, O(6)H of α -CD), 4.21 (s, 2.8H, oxymethylene H of PEA), 3.78 (t, 6H, C(3)H of α -CD), 3.61 (m, 12H, C(5)H and C(6)H of α -CD), 3.39 (t, 6H, C(4)H of α -CD), 2.31 (m, 2.8H, α -methylene H of PEA), 1.53 (m, 2.8H, β -methylene H of PEA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 172.56 (C=O of PEA), 101.96 (C(1) of α -CD), 82.07 (C(4) of α -CD), 73.26 (C(2) of α -CD), 72.11 (C(3) of α -CD), 72.11 (C(5) of α -CD), 61.80 (oxymethylene C of PEA), 60.00 (C(6) of α -CD), 32.96 (α -methylene C of PEA), 23.72 (β -methylene C of PEA). IR (KBr, cm^{-1}): 3376 (vs, ν OH), 2926 (s, ν CH), 1741 (w, ν C=O), 1152, 1078, 1031 (vs, ν C-O). Anal. Calcd for $(\text{C}_{36}\text{H}_{60}\text{O}_{30})_{1.0}(\text{C}_8\text{H}_{12}\text{O}_4)_{0.70}(\text{H}_2\text{O})_{3.8}$: C, 43.01; H, 6.59. Found: C, 42.99; H, 6.50.

α -CD-PTA (1000). Yield: 71%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.46 (m, 12H, O(2)H and O(3)H of α -CD), 4.80 (d, 6H, C(1)H of α -CD), 4.45 (t, 6H, O(6)H of α -CD), 4.06 (t, 2.6H, oxymethylene H of PTA), 3.78 (t, 6H, C(3)H of α -CD), 3.61 (m, 12H, C(5)H and C(6)H of α -CD), 3.39 (t, 6H, C(4)H of α -CD), 2.30 (m, 2.6H, α -methylene H of PTA), 1.88 (m, 1.3H, methylene H of PTA), 1.53 (m, 2.6H, β -methylene H of PTA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 172.65 (C=O of PTA), 101.96 (C(1) of α -CD), 82.07 (C(4) of α -CD), 73.26 (C(2) of α -CD), 72.11 (C(3) of α -CD), 72.11 (C(5) of α -CD), 61.80 (oxymethylene C of PTA), 60.00 (C(6) of α -CD), 33.05 (α -methylene C

of PTA), 27.57 (methylene C of PTA), 23.81 (β -methylene C of PTA). IR (KBr, cm^{-1}): 3391 (vs, ν OH), 2929 (s, ν CH), 1737 (w, ν C=O), 1152, 1078, 1031 (vs, ν C-O). Anal. Calcd for $(\text{C}_{36}\text{H}_{60}\text{O}_{30})_{1.0}$ ($\text{C}_9\text{H}_{14}\text{O}_4$) $_{0.65}$ (H_2O) $_{3.3}$: C, 43.58; H, 6.62. Found: C, 43.57; H, 6.55.

α -CD-PBA (840). Yield: 76%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.47 (m, 12H, O(2)H and O(3)H of α -CD), 4.79 (d, 6H, C(1)H of α -CD), 4.47 (t, 6H, O(6)H of α -CD), 4.00 (m, 2.5H, oxymethylene H of PBA), 3.77 (t, 6H, C(3)H of α -CD), 3.60 (m, 12H, C(5)H and C(6)H of α -CD), 3.32 (m, 12H, C(2)H and C(4)H of α -CD), 2.29 (m, 2.5H, α -methylene H of PBA), 1.51 (m, 5.0H, β -methylene and methylene H of PBA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 172.92 (C=O of PBA), 102.07 (C(1) of α -CD), 82.18 (C(4) of α -CD), 73.37 (C(2) of α -CD), 72.22 (C(3) of α -CD), 72.22 (C(5) of α -CD), 63.90 (oxymethylene C of PBA), 60.42 (C(6) of α -CD), 33.28 (α -methylene C of PBA), 24.93 (methylene C of PBA), 24.01 (β -methylene C of PBA). IR (KBr, cm^{-1}): 3405 (vs, ν OH), 2922 (s, ν CH), 1736, 1711 (w, ν C=O), 1153, 1078, 1031 (vs, ν C-O). Anal. Calcd for $(\text{C}_{36}\text{H}_{60}\text{O}_{30})_{1.0}$ ($\text{C}_{10}\text{H}_{16}\text{O}_4$) $_{0.63}$ (H_2O) $_{3.0}$: C, 44.06; H, 6.65. Found: C, 43.59; H, 6.62.

γ -CD-PEA (700). Yield: 71%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.72 (m, 12H, O(2)H and O(3)H of γ -CD), 4.89 (d, 6H, C(1)H of γ -CD), 4.49 (t, 6H, O(6)H of γ -CD), 4.21 (s, 6H, oxymethylene H of PEA), 3.58 (m, 18H, C(3)H, C(5)H and C(6)H of γ -CD), 3.34 (m, 12H, C(2)H and C(4)H of γ -CD), 2.31 (m, 6H, α -methylene H of PEA), 1.54 (m, 6H, β -methylene H of PEA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 174.21, 172.54 (C=O of PEA), 101.67 (C(1) of γ -CD), 80.92 (C(4) of γ -CD), 72.89 (C(2) of γ -CD), 72.58 (C(3) of γ -CD), 72.17 (C(5) of γ -CD), 61.78 (oxymethylene C of PEA), 59.97 (C(6) of γ -CD), 32.94 (α -

methylene C of PEA), 23.71 (β -methylene C of PEA). IR (KBr, cm^{-1}): 3365 (vs, ν OH), 2936 (s, ν CH), 1737 (w, ν C=O), 1157, 1080, 1026 (vs, ν C-O). Anal. Calcd for $(\text{C}_{48}\text{H}_{80}\text{O}_{40})_{1.0}(\text{C}_8\text{H}_{12}\text{O}_4)_{1.5}(\text{H}_2\text{O})_{8.5}$: C, 42.18; H, 6.78. Found: C, 42.17; H, 6.57.

γ -CD-PTA (1000). Yield: 80%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.72 (m, 12H, O(2)H and O(3)H of γ -CD), 4.89 (d, 6H, C(1)H of γ -CD), 4.49 (t, 6H, O(6)H of γ -CD), 4.06 (t, 4.4H, oxymethylene H of PTA), 3.58 (m, 18H, C(3)H, C(5)H and C(6)H of γ -CD), 3.33 (m, 12H, C(2)H and C(4)H of γ -CD), 2.30 (m, 4.4H, α -methylene H of PTA), 1.87 (m, 2.2H, methylene H of PTA), 1.52 (m, 4.4H, β -methylene H of PTA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 172.63 (C=O of PTA), 101.67 (C(1) of γ -CD), 80.94 (C(4) of γ -CD), 72.91 (C(2) of γ -CD), 72.60 (C(3) of γ -CD), 72.19 (C(5) of γ -CD), 60.63 (oxymethylene C of PTA), 59.99 (C(6) of γ -CD), 33.07 (α -methylene C of PTA), 27.59 (methylene C of PTA), 23.83 (β -methylene C of PTA). IR (KBr, cm^{-1}): 3411 (vs, ν OH), 2925 (s, ν CH), 1733 (w, ν C=O), 1156, 1080, 1027 (vs, ν C-O). Anal. Calcd for $(\text{C}_{48}\text{H}_{80}\text{O}_{40})_{1.0}(\text{C}_9\text{H}_{14}\text{O}_4)_{1.5}(\text{H}_2\text{O})_{6.8}$: C, 42.81; H, 6.76. Found: C, 42.79; H, 6.61.

γ -CD-PBA (840). Yield: 77%. ^1H NMR (DMSO- d_6 , 270MHz): δ 5.72 (m, 12H, O(2)H and O(3)H of γ -CD), 4.88 (d, 6H, C(1)H of γ -CD), 4.49 (t, 6H, O(6)H of γ -CD), 4.00 (m, 2.5H, oxymethylene H of PBA), 3.57 (m, 18H, C(3)H, C(5)H and C(6)H of γ -CD), 3.35 (m, 12H, C(4)H and C(4)H of γ -CD), 2.29 (m, 4.4H, α -methylene H of PBA), 1.52 (m, 8.8H, β -methylene and methylene H of PBA). ^{13}C NMR (DMSO- d_6 , 67.9MHz): δ 172.71 (C=O of PBA), 101.67 (C(1) of γ -CD), 80.94 (C(4) of γ -CD), 72.91 (C(2) of γ -CD), 72.60 (C(3) of γ -CD), 72.19 (C(5) of γ -CD), 63.72 (oxymethylene C of PBA), 60.24 (C(6) of γ -CD), 33.14 (α -methylene C of PBA), 24.96 (methylene C of PBA), 23.89 (β -methylene C of PBA). IR (KBr, cm^{-1}): 3368 (vs, ν

OH), 2931 (s, ν CH), 1732 (w, ν C=O), 1158, 1080, 1027 (vs, ν C-O).
Anal.Calcd for (C₄₈H₈₀O₄₈)1.0 (C₁₀H₁₆O₄)1.1 (H₂O)9.1: C, 42.15; H,
6.94. Found: C, 42.12;H, 6.88.