

Supplementary materials

Article

Biocatalytic Approach for Novel Functional Oligoesters of ϵ -Caprolactone and Malic Acid

Diana Maria Dreavă ¹, Ioana Cristina Benea ¹, Ioan Bitcan ¹, Anamaria Todea ^{1,*}, Eugen Şişu ², Maria Puiu ² and Francisc Peter ^{1,3}

¹ University Politehnica Timisoara, Faculty of Industrial Chemistry and Environmental Engineering, Biocatalysis Group, C. Telbisz 6, 300001 Timisoara, Romania; diana.aparachei@upt.ro (D.M.D.); ioana.benea@student.upt.ro (I.C.B.); ioan.bitcan@upt.ro (I.B.); francisc.peter@upt.ro (F.P.)

² “Victor Babes” University of Medicine and Pharmacy Timisoara, Faculty of Medicine, 2 Eftimie Murgu Sq., 300041 Timisoara, Romania; sisueugen@umft.ro (E.S.); maria.puiu@umft.ro (M.P.)

³ Research Institute for Renewable Energy, Gavril Musicescu 138, 300501 Timisoara, Romania

* Correspondence: anamaria.todea@upt.ro

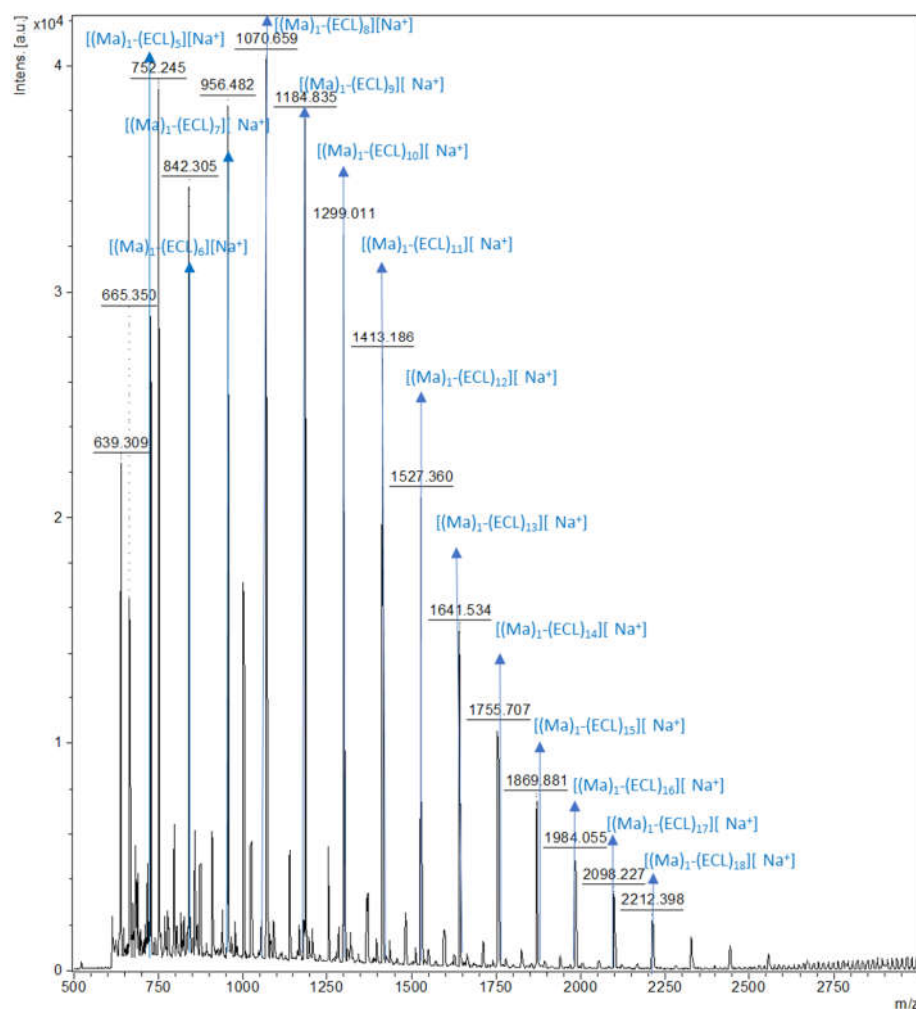


Figure S1. MALDI TOF-MS spectrum of reaction products obtained from ECL and D,L-MA synthesized in solventless system at 80 °C in the presence of GF-CalB-IM at a molar ratio ECL:MA = 1:1.

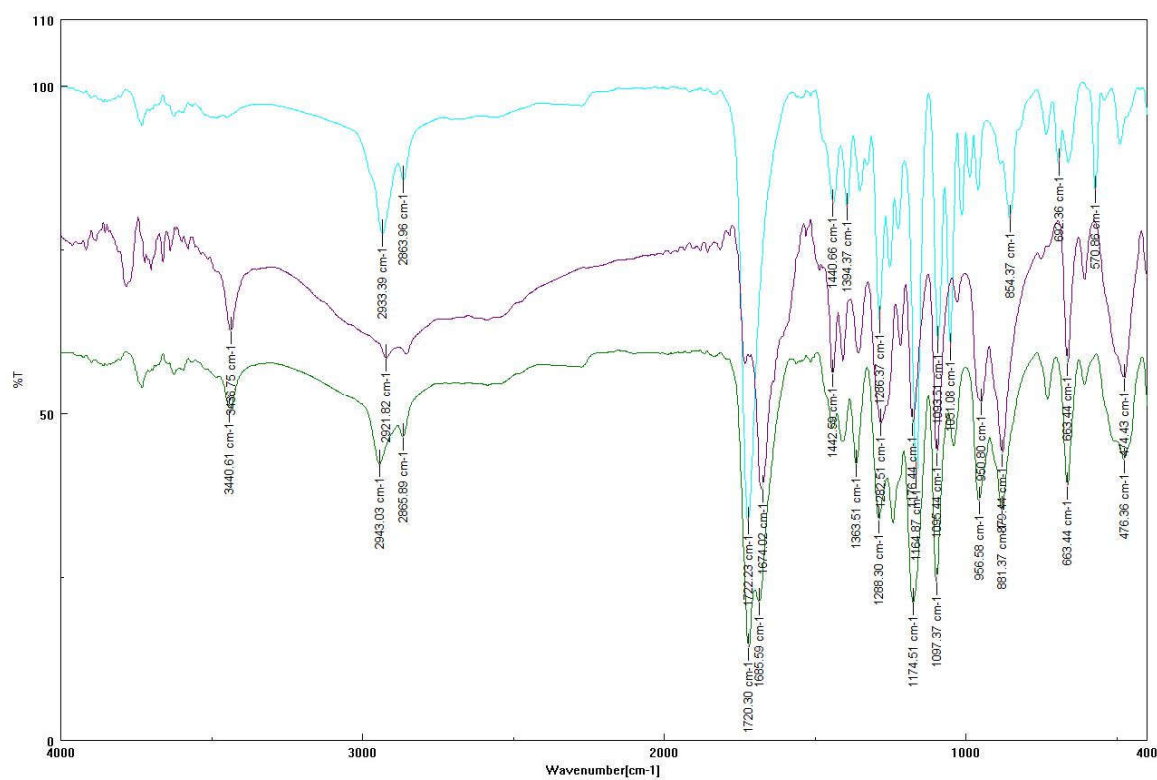


Figure S2. The FT-IR spectrum of MA (purple), ECL (blue) and ECL_MA co-oligomer (green).

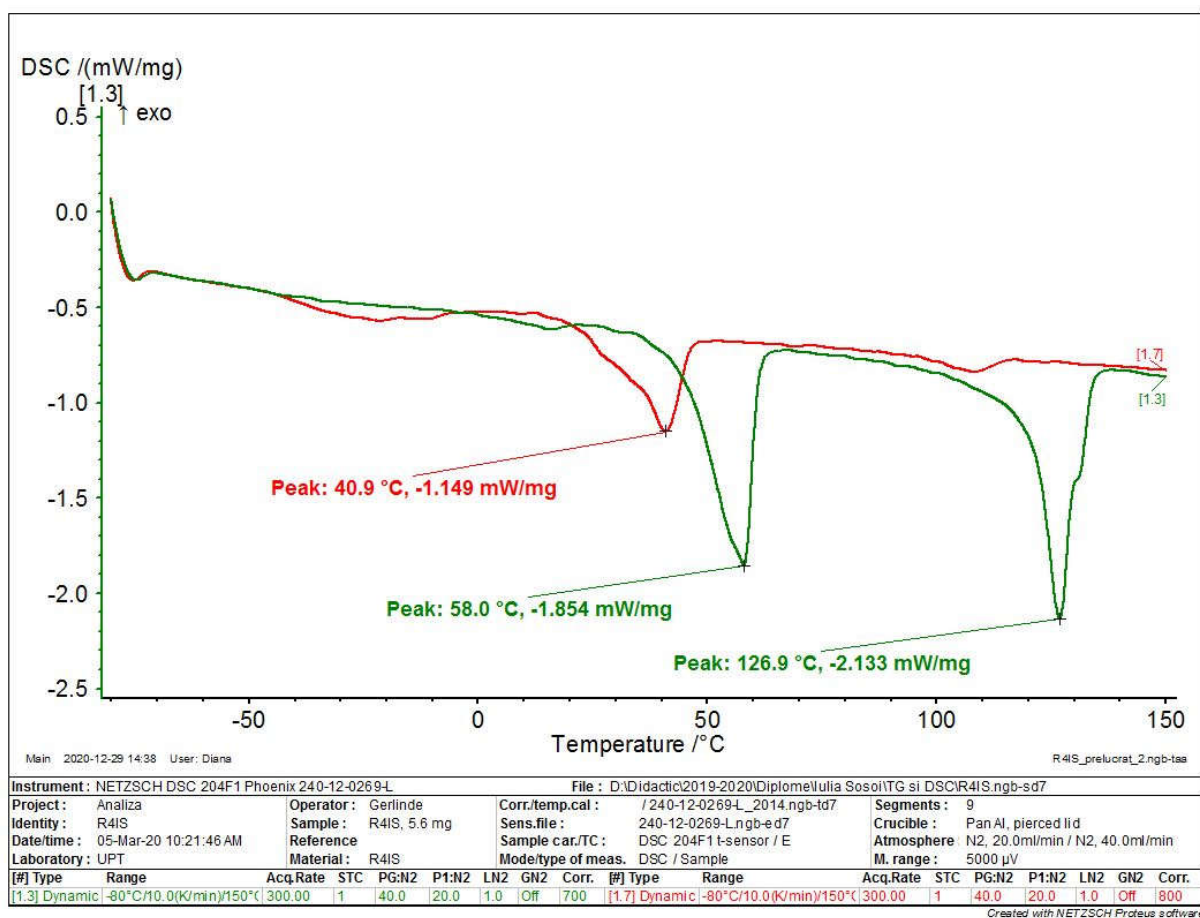


Figure S3. The DSC melting endotherms in the range -80°C to +150°C (first heating cycle red, second heating cycle green) of the reaction products obtained from ECL and D,L-MA synthesized in solventless system at 80 °C in the presence of Novozyme 435 at a molar ratio ECL:MA = 2:1.

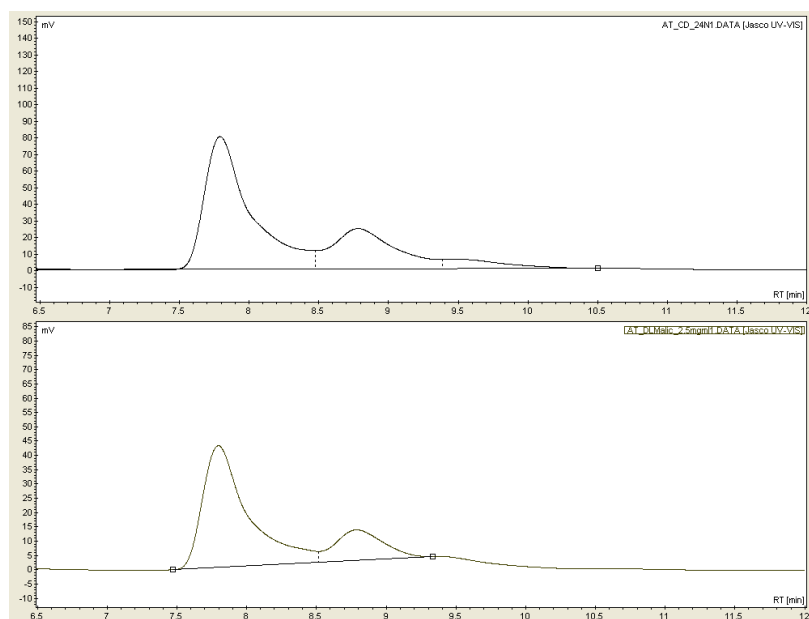


Figure S4. The HPLC chromatogram of the reaction mixture obtained using N435 as biocatalyst, at 80°C, 24h, in solvent less system, extracted with methanol (upper figure) and of the 1mg/ml standard malic acid sample (lower figure). Using the analysis conditions presented in the Methods part, malic acid was eluted at retention time of 7.79 min. The peak at retention time 8.78 min is fumaric acid, present as impurity in the commercial malic acid. The absorbance of fumaric acid at 210 nm is about 100 times stronger than of malic acid.