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In vitro enzymatic degradation of biodegradable poly(linoleic acid graft copolymers

Abdulkadir Allı[1], Sema Allı[1], Seda Tığlı Aydın[2], Muharrem Gökçen[3], Baki Hazer[2]

[1] Chemistry Department, Faculty of Arts and Sciences, Düzce University, Düzce, Turkey, E-mail: abdulkadiralli@duzce.edu.tr

[2]Chemistry Department, Faculty of Arts and Sciences, Bülent Ecevit University, Zonguldak, Turkey

[3] Physics Department, Faculty of Arts and Sciences, Düzce University, Düzce, Turkey

Poly(linoleic acid)-*g*-poly(ε-caprolactone) (PLina-*g*-PCL) and poly(linoleic acid)-*g*-poly(styrene)-*g*-poly(ε-caprolactone) (PLina-*g*-PSt-*g*-PCL) were synthesized by ring-opening polymerization of ε-caprolactone initiated by PLina and one-pot synthesis of graft copolymers, and by ring-opening polymerization and free radical polymerization by using PLina, respectively. PLina-*g*-PCL, PLina-*g*-PSt-*g*-PCL3, and PLina-*g*-PSt-*g*-PCL4 copolymers containing 96.97, 75.04 and 80.34 mol% CL, respectively, have been investigated regarding their enzymatic degradation properties in the presence of Pseudomonas lipase. Reduced PCL content in PLina-*g*-PSt-*g*-PCL copolymers decreased the degradation rate, probably due to the PSt enrichment within the structure, which blocks lipase contact with PCL units. Thus, copolymerization of PCL with PLina and PSt units leads to a controllable degradation profile, which encourages the use of these polymers as promising biomaterials for tissue engineering applications [1,2].

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References

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