A Strategy for Increasing Molecular Weight of Polyester by Lipase-Catalyzed Polymerization

Hiroki Ebata, Kazunobu Toshima, and Shuichi Matsumura

A strategy for increasing the molecular weight of a polyester by enzymatic polymerization of a lactone and hydroxy acid was developed using azeotropic dehydration with toluene and a Dean–Stark trap packed with molecular sieves.

\[
\text{O} \quad \xrightarrow{\text{Lipase}} \quad \left[ \text{O} \right]_{n}^{\frac{\text{C}(\text{CH}_{2})_{m}\text{O}}{\text{H}}} \\
\text{m}=5 \ (\text{PCL}) : \ M_{n}=81000 \\
\text{m}=14, \ 15 : \ M_{n}=42000
\]