

Production of sucrose laurate by lipase-catalyzed transesterification in ionic liquids

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Room temperature ionic liquids (RTILs) have been called as “green solvents” because ionic liquids (ILs) may replace volatile and flammable organic solvents which are the major cause of environmental pollution. It is reported that [NTf₂] – based ILs give rise to higher bioconversion yields compared to other ILs. Thus, in this research, lipase-catalyzed transesterification of sucrose to sucrose laurate in [NTf₂] – based ILs was demonstrated. Among [NTf₂] – based ILs tested, [Ediim][NTf₂] showed the highest conversion yield. Based on this result, the effect of the substrate concentration on the conversion yield in [Ediim][NTf₂] was investigated. The best conversion yield was obtained when 0.024M of sucrose and 0.06M of vinyl laurate were reacted in [Ediim][NTf₂]. Water is produced in the transesterification of sucrose with vinyl laurate to sucrose laurate. However, in the presence of water, lipase also catalyzes the hydrolysis according to the literature. Therefore, we investigated the effect of water on the lipase-catalyzed transesterification of sucrose by using the different amount of molecular sieve.