Lipase-catalyzed amino sugar derivative in tri-solvent mixture

ABSTRACT

In this work, a new type of amino sugar derivative tagged as amino sugar similar to N-acetyl-glucosamine, commonly used in medical field as medicine to treat osteoarthritis has been synthesized. This amino sugar derivative produced from glucose and propylamine with the aid of immobilized Candida antarctica (Novozyme 435) lipase, as catalyst. Mixtures of solvent influence the high solubility of sugar and thus increasing the yield. Optimization studies such as time, molar ratio, temperature and enzyme quantity conducted for optimization. Optimized condition yields 73.37 % amino sugar was obtained upon 2 h of reaction, 1:5 molar ratio of substrates, 40 ºC temperature and 17 % enzyme mass.

Keyword: Lipase; Glucose; Amino sugar; Ionic liquid; Enzymatic.