Technology Transfer

Area of Technology: Polymer Technology

Title of the Innovation: A CATALYST FOR THE SYNTHESIS OF ß – AMINOALCOHOLS

Brief About Innovation: β-Amino alcohol has attracted a large number of researchers in the synthesis of a good amount of biologically active natural and synthetic products including chiral auxiliaries. These play an increasingly vital role in medicinal chemistry, pharmaceuticals and organic synthesis. β-Blockers are used in the treatment of a wide variety of human disorders like hypertension, sympathetic nervous system disorders, heart failure, and cardiac arrhythmias and also as insecticidal agents. The ring opening of epoxides with amines represents one of the most important and straight forward methods of preparing these compounds. Various Lewisacid, viz. Y(NO3)3.6H2O, ZrCl4, Sc(OTf)3,SmI2, RuCl3, and NbCl5 catalysed reactions have been examined for this class of reactions. The classical synthesis of β-amino alcohol involves heating of epoxides with amines in excess at elevated temperatures, but high temperature may not be the standard condition for molecules having sensitive functional groups. Therefore a milder and improved procedure was developed using alumina, metal amides, metal alkoxides, metal halides, and silica perchloric acid. Again many of the metal based catalysts are toxic. Due to the toxicity of metals, a better catalyst is still desirable for the nucleophilic ring opening of epoxides by various amines to afford the corresponding β-amino alcohols. Bismuth(III) chloride has also been tried earlier for the ring opening of epoxides but it required a longer reaction time. Due to the toxicity of metals and longer 3 reaction times, a better catalyst is still desirable for regioselective ring opening of epoxides to yield the corresponding β-amino alcohols with reduced time and in good yields.

Salient Features:

- It is therefore an object of this invention to propose a process for the synthesis of β-amino alcohols by the regioselective ring opening of epoxides and a catalyst therefor.
- It is a further object of this invention to propose a process for the synthesis of β-amino alcohols, using a catalyst which is non-toxic and environment friendly.
- A still further object of this invention is to propose a process for the synthesis of β-amino alcohols, using a catalyst which is cost-effective.
- Another object of this invention is to propose a process for the synthesis of β- amino alcohols, which requires mild reaction conditions suitable for temperature sensitive functional groups

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