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Applications of sharpless asymmetric dihydroxylation in total synthesis of natural product

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In continuation of our interest in the field of asymmetric synthesis and total synthesis of natural products, most of them have several stereogenic centers. The aim of this study is to present the applications of sharpless asymmetric dihydroxylation (SAD) (also called the sharpless bishydroxylation). SAD is the chemical reaction of an alkene with osmium tetroxide in the presence of a chiral quinine ligand to form an optically pure vicinal diol. It is common practice to perform this reaction using a catalytic amount of osmium tetroxide, which after reaction is regenerated with either potassium ferricyanide or N-methylmorpholine N-oxide. This dramatically reduces the amount of the highly toxic and very expensive osmium tetroxide needed. These four reagents are commercially available premixed ("AD-mix"). The mixture containing (DHQ)2-PHAL is called AD-mix-α, and the mixture containing (DHQD)2-PHAL is called AD-mix-β. Nowadays, SAD is considered as a powerful tool for the preparation of chiral dihydroxy compounds which offers remarkable opportunities for enantioselective synthetic manipulation. In this study, the applications of SAD in total synthesis of naturally occurring compounds will be discussed.

Biography

Majid M Heravi has completed his BS degree in Chemistry from the National University of Iran in 1975, his MS and PhD degrees in Organic Chemistry from Salford University, England in 1977 and 1980. He is currently working as Professor in the Department of Chemistry at Alzahra University, Tehran, Iran. He has previously been a visiting Professor at UC Riverside, California, USA and Hamburg University, Hamburg, Germany. His research interests focuses on "Heterocyclic chemistry, catalysis, and organic methodology". He has published more than 660 ISI cited papers so far.

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