General Introduction

Natural occurrence of epoxy glycerides and their use as plasticizers and stabilizers have focused interest on long chain epoxy acids.

Epoxidation is one of the chemical reactions restricted to the unsaturated compounds, and introduced the three-membered-epoxide ring. The resulting products are usually quite reactive and find a large number of potential and actual uses. There are two general methods for the epoxidation of unsaturated compounds. The first is the pre-epoxidation technique, in which the peracid is separately prepared, followed by reacting it with the compound to be epoxidized. The second is the in situ technique, where the peracid is to be formed during the epoxidation process. The earlier work indicated that, the peracetic acid could not be used for epoxidation, but it has become the most widely used peracid since 1945, till, development of a suitable conditions for obtaining high yields of epoxides with a minimum of side reactions. Several hundred unsaturated compounds can be epoxidized with peracetic acid which can be conducted in aqueous, non aqueous, homogeneous and heterogeneous media.

Fatty acids (oleic, linoleic and linolenic acid), as well as vegetable oils (soybean , corn, cotton seed, peanut and sunflower) were in situ epoxidized using different catalysts such as, sulphuric acid and cation exchange resins.

El-Sawy et al.epoxidized Rice Bran Oil by in situ technique, using Amberlite IR-120 as catalyst. The epoxidized products are widely used in the synthesis and formulation of anticorrosive coatings, adhesive, aminated products, urethane foams, alkyd resins and encapsulating compounds. Moreover, they can be successfully applied as intermediates for the production of other interesting compounds.