Modification of soybean oil for intermediates [2] - epoxidation, alcoholysis and amidation -

이규완*, Cheng Hailan[1], Jin Yinhua, 김영운[2], 정근우[2]
중국연변과기대 응용생물학과; [1]경희대학교 약학대학;
[2]한국화학연구원 신화학연구단
(kwlee@ybust.edu.cn*)

Vegetable oils are a major source of many base chemicals. Unfortunately, most vegetable oils exhibit lower thermal and oxidation stability because of double bonds and even worse low-temperature behavior. These physical and chemical properties can be improved by chemical modification. The first one is the catalytic hydrogenation of oils and the second one is the addition of some chains to the oils through epoxidation and ring opening reaction with alcohols and amines and the third one is light cross-linking with diamine. Traditional soybean oil possesses good lubricating properties, high-biodegradability and it can be recycled as a carbon resource. The epoxidation of soybean oil with dilute aqueous solution of hydrogen peroxide and acetic acid in the presence of concentrated sulfuric acid or Amberlyst resin catalyst was studied. Then, we added alcohols and amines to epoxidized soybean oil as base materials for lubricants. The reaction products carefully analyzed by means of 1H-NMR-, FT-IR and GC-Mass spectroscopies. This paper covers, epoxidation of virgin and reduced soybean oils and alcoholysis and amidation of epoxidized soybean oils and soybean oil itself.