

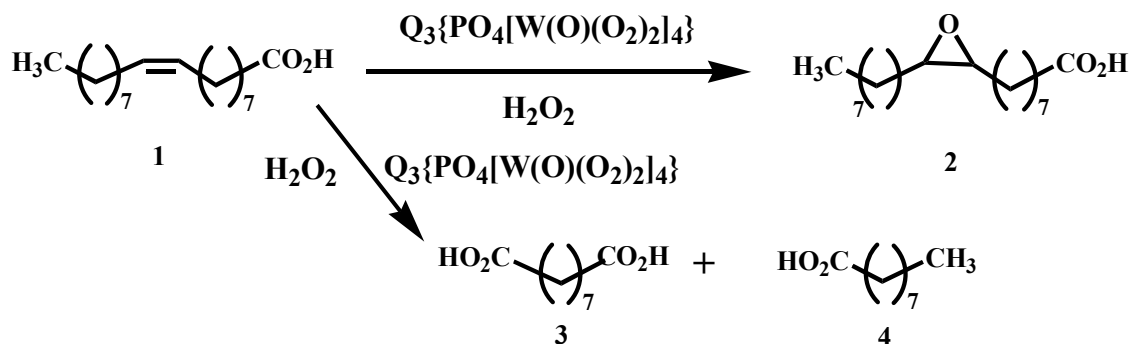
Catalytic Oxidation of Unsaturated Fatty Acids in Biphasic System

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Integrated processing of renewable raw materials with the use of wide spectrum of modern methods of organic synthesis represents an attractive alternative of the traditional petrochemical route of the synthesis of a number of practically important compounds. Potential possibilities of the utilization of products of wood-chemical industry in organic synthesis are far from being exhausted by existing at present time sphere of their use. Primarily it concerns natural products like fatty acids.

In this connection the investigations of oxidation of oleic acid, the main constituent of tall oils, and ricinoleic acid isolated from castor oil have been carried out. Various factors having the influence on the catalytic activity of the system based on the tetrakis(oxodiperoxotungsto)phosphate(3-) in combination with quaternary ammonium cations, in the reactions of the oxidation of unsaturated fatty acids with the 30% hydrogen peroxide aqueous solution have been studied.



It was found that the epoxidation of oleic and ricinoleic acids proceeds with the conversion 85 % and yield 80 % at 60 °C at the ratio of $[H_2O_2] / [S] = 2$ in 6 hour. The most active catalytic system for the unsaturated fatty acids oxidation is tetra(diperoxotungsto)phosphate methyltrioctylammonium. Increasing of reaction temperature and amount of catalyst and hydrogen peroxide resulted in the oxidation cleavage with the 90 % of fatty acids conversion in 3 hours.

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