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Abstract	:	Epoxidized corn oil is of great interest because they are derived from sustainable, renewable natural resources and are environmentally friendly. There is a lack of extensive research on optimizing process parameters for the epoxidation of corn oil, which serves as the raw material. In this study, the epoxidation of corn oil was carried out by reacting formic acid and hydrogen peroxide, employing an in situ peracids mechanism. The findings revealed that the optimal reaction conditions for producing epoxidized corn oil with the highest oxirane content were a catalyst type of sulfuric acid, reaction temperature of 35°C, a molar ratio of formic acid to linoleic acid of 1:1, and a molar ratio of hydrogen peroxide to linoleic acid of 1.75:1. By employing these optimal conditions, the maximum relative conversion of palm oleic acid to oxirane was achieved at 82%. After 100 iterations, the reaction rate constant based on optimized epoxidized corn oil production was obtained as follows: = 0.13 mol L^{-1} min^{-1} , = 37.07 mol L^{-1} min^{-1} , and = 10.00 mol L^{-1} min^{-1} . The findings validated the kinetic model by showing good agreement between the simulation and experimental data.