

This invention relates to a method for producing an alkyl ester via a transesterification or esterification reaction. The method includes (1) mixing an oil source containing a triglyceride or a carboxylic acid and a first primary alcohol or a first secondary alcohol in a first organic solvent to form a first solution; in which each molecule of the first organic solvent contains 4-8 carbon atoms and a heteroatom; (2) reacting the triglyceride or the carboxylic acid with the first primary alcohol or the first secondary alcohol in the presence of a first lipase to produce a first alkyl ester, in which the first solution does not undergo phase separation throughout the reaction; and (3) separating the first alkyl ester from the first solution.