

11. Which one of the following statements about catalysis in the production of biodiesel is correct?
- (a) Base catalysis generally has a higher reaction rate but, unlike lipase catalysis, can cause saponification, which decreases the biodiesel yield.
 - (b) The sodium hydroxide and potassium hydroxide used in base catalysis are readily available and relatively cheap, but lipase catalysis produces more toxic waste water.
 - (c) Base catalysis involves only one step, while lipase catalysis involves many steps in its synthesis sequence, which in turn adds to the cost of the process.
 - (d) Base catalysis typically has a lower rate and yield of biodiesel but lipase catalysis is sensitive to alcohols, such as methanol, and has higher energy costs.