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Abstract	:	<p>The rapid increase of biodiesel production in Malaysia generates enormous quantities of crude glycerol as the primary co-product along with the biodiesel which has limited application in local industries. The conversion of glycerol to higher-value products like monoglycerides seems to be an attractive route. Various heterogeneous catalysts have been investigated to produce monoglycerides via esterification with fatty acids, but the application is limited to short-chain fatty acids such as lauric acid. Solid catalysts, the parameters affecting reaction mechanisms and pathways, and kinetics of esterification of glycerol reactions are reviewed to highlight the need of superacidic mesoporous catalysts for demonstrating the catalytic activity towards the formation of monopalmitin with high palmitic acid conversion. Esterification of fatty acids to produce monoglycerides is the best approach to reduce the amount of glycerol but it is necessary to synthesize innovative and selective catalysts such as modified mesoporous catalysts to enhance the overall yield of monoglycerides. This would not only solve the problem of crude glycerol but also lead to sustainable biodiesel production especially in the context of Malaysian economy.</p>