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ABSTRACT

A novel esterase which is derived from Serratia marcescens is disclosed. Said esterase has the following physico-chemical properties and enzymatic characteristics:

(1) Activity; it (i.e., said esterase) hydrolyzes an ester bond of organic carboxylates, (2) Substrate specificity; it acts on alkyl esters of organic carboxylic acids, triglycerides or thiol esters, (3) Optimum pH; its optimum pH is 7.5 - 9.0 when the hydrolysis is carried out by using olive oil as the substrate, (4) pH stability; it is stable at pH 5.0 - 9.0 when it is stored at 30 °C for one hour, (5) Optimum temperature; its optimum temperature is 40 - 50 °C when the hydrolysis is carried out by using olive oil as the substrate, (6) Heat stability; it is stable at a temperature of not higher than 50°C when it is stored at pH 8.0 for 30 minutes, (7) Molecular weight; 62,000 ± 2,000 (SDS-polyacrylamide gel electrophoresis), (8) Isoelectric point; 4.6 ± 0.1, (9) Effect of metal ions; it is activated in the presence of 1 mM calcium ion, and inhibited in the presence of 1 mM cobalt ion, nickel ion, iron ion or ethylenediamine-tetraacetic acid. Said esterase can widely be applied for organic synthetic reactions.

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