Nutritional Requirements of *Aeromonas* sp. EBB-1 for Lipase Production

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ABSTRACT

The demand for the production of lipase, a widely used hydrolytic enzyme in biotechnological applications, has led to research on lipase-producing bacteria and culture strategies. In our previous study, we isolated Aeromonas sp. EBB-1 as a novel thermostable-lipase producer from marine sludge in Angsila, Thailand. Given this bacterium's high production of lipase, we now further investigate the effects of different nutritional supplements on its lipase production. Maximum lipase activity (81-fold) was found after cultivating the strain in a medium containing 2.5% (w/v) yeast extract. Separately, adding 0.1% (w/v) glucose, 1.5% (w/v) proline and 0.5% (w/v) gum arabic enhanced lipase production activity nearly 9-, 10- and 6-fold, respectively. In contrast, adding a combination of nutrients in the same medium inhibited lipase production compared to the control. The result with yeast extract is especially promising, yielding high lipase concentrations from Aeromonas sp. EBB-1 in an inexpensive and simple medium.

Keywords: Nutritional sources, *Aeromonas* sp., Optimization, Lipase production, Thermostable lipase

INTRODUCTION

Lipases or triacylglycerol acylhydrolases (EC 3.1.1.3), one of the most versatile biocatalysts, are used in many biotechnological applications due to the different reactions they are able to catalyze and to their exquisite regio-specificity and chiral selectivity (Arbige and Pitcher, 1989; Jaeger et al., 1994 and Hasan et al., 2006). Most lipases used in industrial applications are generally distributed in plants, animals and microorganisms (Arbige and Pitcher, 1989; Jaeger et al., 1994; Fang et al., 2006). Among them, lipases of microbial origin are some of the most commonly used, since they can catalyze a variety of hydrolytic or