

Thesis Title	Production of Free Fatty Acids by Defatted Rice Bran Lipase
Thesis Credits	12
Candidate	Miss Wannee Papungkorn
Supervisors	Assoc. Prof. Dr. Kanit Krisnangkura Assoc. Prof. Narumon Jeyashoke
Degree of Study	Master of Science
Department	Biochemical Technology
Academic Year	1999

Abstract

Defatted rice bran is a by product from edible rice bran oil industries and rich in lipase. The objective of this study is to investigate its potential application in production of free fatty acids for oleochemical industry. The hydrolysis of rice bran and palm oil of 10, 5 and 2.5%, moisture content of the defatted rice bran of 25% are studied. The percent hydrolysis of rice bran oil are 90.46, 87.32, 88.03% and palm oil are 89.17, 87.73, 90.76% in 150, 60, 40 days, respectively. Water is not the limiting factor of the hydrolysis reaction. The inhibition of hydrolysis by glycerol is less pronounced than by free fatty acid. The combination of free fatty acid and glycerol gave the highest inhibition. When free fatty acid and glycerol are added at 20, 40, 60% by weight to rice bran of 10% oil in 40 days, the hydrolysis of rice bran oil decreased from 56.69 to 41.84, 38, 26.63% respectively. Also, hydrolysis of palm oil are decreased from 51.04 to 45.33, 39.64, 27.63% respectively. Analysis of fatty acid composition of residual rice bran oil and palm oil suggested that rice bran lipase has no positional specificity.

It might be concluded that free fatty acid production from rice bran lipase is very possible but the activity of lipase should be analyzed before using, also the amount of substrate and enzyme should be determined. Thus, it might be provided an alternative process for the production of free fatty acid and glycerol for industry.

Keywords : free fatty acids / hydrolysis / inhibition / production / rice bran lipase