Biosynthesis of Phytosteryl Ester Using Recombinant Candida rugosa Lipase Isozymes.

Shu-Wei Chang, E-mail: swchang@mail.dyu.edu.tw

ABSTRACT

Phytosterols is a steroid compound that exists in higher plants. It has lowering blood pressure, anticancer, diminish inflammation, regulate metabolism and other functions which can be widely applied in medicine, food and feed industries. In recent years, several reports have pointed out that the phytosteryl ester derivatives can be synthesized by commercial lipase AY (from Candida rugosa) and give higher stability, higher fat-soluble properties and higher inhibition rate of cholesterol absorption in vivo. Therefore, in this study, we planned to compare the catalytic efficiency of different recombinant lipase isozymes from C. rugosa (CRL1 to CRL4) on phytosteryl esters production. Recently, we have expressed the active recombinant four CRL isozymes from Pichia pastoris and determined their hydrolytic activity as follow: CRL1 7.3±1.6 Unit/mL, CRL2 0.6 ± 0.3 Unit/mL, CRL3 1 ± 0.3 Unit/mL, CRL4 1.6 ± 0.3 Unit/mL. In the future, we expected to screen a least one CRL isozyme which is the most efficient biocatalyst on phytosteryl esters production to benefit various industrial applications.

Keywords: Phytosterol, Candida rugosa, ester, lipase, Pichia pastoris

REFERENCES

Shu-Wei Chang, Myron Huang, Yu-Hsun Hsieh, Ying-Ting Luo, Tsung-Ta Wu, Chia-Wen Tsai, Chin-Shuh Chen, Jei-Fu Shaw. Simultaneous production of fatty acid methyl esters and diglycerides by four recombinant Candida rugosa lipase's isozymes. Food Chemistry 155 (2014) 140–145