

The Effects of rice bran as a nitrogen source for D-lactic acid production on *Zymomonas mobilis*

Jun Ho Kook, Yong Hun Lee, Sang Heum Shin, and Kap-Seok Yang

Macrogen Inc., World Meridian Venture Center 10F, #60-24, Gasan-dong, Geumcheon-gu, Seoul 153-781, Republic of Korea.

Abstract

Lactic acid is used as a raw material for polymerization of Polylactic acid (PLA), which is an important component of biodegradable plastic. We have developed a free D-(-)-lactic acid producing *Zymomonas mobilis* by introducing a heterologous D-lactate dehydrogenase (*D-ldh*) gene from *Leunconostoc mesenteroides*. In order to reduce the raw material cost of D-lactic acid fermentation, the rice bran was used as nitrogen source in this study. As a result, when the fermentation was carried out under optimal rice bran powder concentration of 10 g/l, the D-lactic acid yield reached 35% with a volumetric production rate of 1.5 g l⁻¹ h⁻¹. Compare to corn steep liquor and yeast extract, the D-lactic acid yield increased by 9.12% and 7.00%, respectively. In addition, the optical purity of D-(-)-lactic acid was extremely high of 99.9% or above in all conditions.