

### Enhanced production of fumaric acid by *Rhizopus oryzae* mutant

배양원, 강성우<sup>1</sup>, 김승욱<sup>1</sup>, 전계택<sup>2</sup>, 조재훈<sup>3</sup>, 이도훈<sup>3</sup>, 김상용<sup>3</sup>, 박철환\*  
광운대학교; <sup>1</sup>고려대학교; <sup>2</sup>강원대학교; <sup>3</sup>한국생산기술연구원  
(chpark@kw.ac.kr\*)

Fumaric acid is the chemical compound with the formula  $\text{HO}_2\text{CCH}=\text{CHCO}_2\text{H}$ . This white crystalline compound is one of two isomeric unsaturated dicarboxylic acids, the other being maleic acid wherein the carboxylic acid groups are cis. The commercial demand for fumaric acid has increased because of its extensive applications such as the food industry, the paper industry, the pharmaceutical industry and the feed industry. Fumaric acid can be produced by fungal fermentation and chemical synthesis. In the case of fungal fermentation, the production of fumaric acid has been performed by *Rhizopus oryzae* and *Aspergillus niger*. Recoverd spore of *R. oryzae* ATCC 20344 was treated with UV (5 min) and successive  $\gamma$ -ray (7 KGy) according to the lethal rate of 99.9%. Mutants were selected based on the halo size in the selection medium and the production of fumaric acid was investigated in the submerged culture by *R. oryzae* mutants. Finally, *R. oryzae* RUR709 was selected and allowed for the increase in the production of fumaric acid from 14.9 to 23.4 g/L.