

## Optimization of medium composition for the production of alkaline serine protease by *Bacillus clausii* I-52

Jae-Woo. Lee, Eun-Ki Kim\*

<sup>1</sup>Environmental Material Biotechnology Laboratory Department of Biological Engineering  
Inha University, Incheon 402-751, Korea  
Tel, (032) 872-2978, Fax. (032)872-4046

### Abstract

It is well known that protease constitute one of the most important groups of industrial enzyme, since it accounts for at least a quarter of the total global enzyme production. In recent years, the use of alkaline protease in a variety of industrial processes like detergents, food, leather and silk has increased remarkably. In this study, alkaline serine protease (ASP) productivity was enhanced by statistical medium optimization in the alkalophilic strain of *Bacillus clausii* I-52 which was isolated from the heavily polluted tidal mud flats of Yellow Sea.

Three medium components (Sodium citrate, Sodium carbonate, Wheat flour) were selected by Plackett-burman experimental design method and their effective range was investigated by "one factor at a time" method.

Finally, optimum concentration of three components was determined by Box-Benken experimental design. We compared industrial production medium with optimum medium by 5L-fermenter cultivation. Once more concentration test result, we shown maximum activity when sodium citrate : 0.5g , sodium carbonate : 1.6% and wheat flour : 0.025g. So, we experimented at 250ml flask cultivation by this condition. At this time, protease production increased threefold than industrial production medium

### References

- 1) Han-Seung Joo, Gun-Chun Park, Ki-Tae Kim, Seung R. Paik, Chang-Soon Chang\*, *2001 Process Biochemistry* **37**:299-303.
- 2) Q. H. Chan, G. Q. He\*, Mokhtar A. M. Ali (2002), *Enzyme and Microbial Technology* **30**:667-672.
- 3) Qasim Khalil, Vikram Sahai, Rani Gupta\* (2003), *Process Biochemistry* **00**:1-7.
- 4) C. Ganesh Kumar\*, Hiroshi Takagi (1999), *Biotechnology Advances* **17**:561-594.