CULTURE OPTIMIZATION FOR ENDOLYSIN SYNTHESIS OF *E. coli* BL21-LysL

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Summary

Endolysins (or lysins) are hydrolysis enzymes derived from bacteriophages that destroy peptidoglycans of bacterial cell walls, which are considered to be an active food antibiotic, specific activity and safe for users. In our study, the *E. coli* BL21 recombinant strain, carrying the *LysL* gene, encodes endolysin, which is optimized for the culture condition of endolysin biosynthesis. Cell disruption methods for enzyme recovery, and specific anti-bacterial properties of LysL endolysin were also studied. Results showed that enzyme LysL was strongly expressed in an IPTG 0.5 mM inducer concentration, which was added to the medium containing the optimum components: 3 g/l of yeast extract, 7 g/l of tryptone, 10 g/l of NaCl supplemented with 1 g/l glucose after each hour of culturing. The optimal temperature for bacterial growth as well as the endolysin enzyme expression was 30°C, and optimal haversting time was 4-5 hours after induction. Ultrasonic lysis was effective method for endolysin release with an enzyme activity of 8.6 U/mL of crude protein. Our results laid the groundwork for the production of large-scale recombinant Lysl endolysin enzyme for industrial use in milk and food preservation.

Keywords: *Endolysin, food-antibiotic, LysL, recombinant strain*.