

# Research on high-yield fermentation of thuringiensin from *Bacillus thuringiensis* subsp. darmstadiensis

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## ABSTRACT

Thuringiensin from some *Bacillus thuringiensis* (B.t.) strains is a kind of insecticidal adenine-nucleotide analogs, which has a wide range of activity against members of several insect orders; and thus, it is a new bioinsecticide with high commercial value. In this study, a novel 13-L airlift reactor with net draft tube was used for a series of B.t. subsp. darmstadiensis fermentation tests. The production during fermentation course was quantified by an HPLC method modified in this laboratory. The results showed that a similar growth pattern was obtained using either stirred-tank bioreactor or the novel bioreactor mentioned above. We tested different ratio of molasses (10, 12, 15, 20 g/L). Effect of carbon source, using an airlift reactor with net draft, on the thuringiensin productivity. The molasses of 15 g/L, We obtained production level 2.22 mg/mL, high is much higher than the productivity of conventional stirred-tank (1.34 mg/mL). With the same culture, a stirred tank and a modified airlift reactor were compared to cultivate B.t. subsp. darmstadiensis for thuringiensin production. Shaker flask and 3 L stirred tank study indicated that the addition of 360 unit/mL of penicillin- G at 9th improved the thuringiensin production by more than 110 %. The dosage of 360 unit/mL did not affect the growth of the microorganism. However, cell growth was inhibited at higher dosage of the antibiotic. High thuringiensin productivity of 2.58 mg/mL was attained in this study, which is about two or ten fold or high comparing with those reported in the literature.

Keywords : Thuringiensin ; Airlift reactor with net draft tube ; HPLC ; Penicillin-G

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## REFERENCES

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