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Fermentation of *B. licheniformis* N 1 used by agro-product

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Bacillus licheniformis N1 was biocontrol agent for gray mold. The effects of process condition and substrates on the production of the cells by *Bacillus licheniformis* N1, have been studied in pH-controlled fermentation. Effect of control of pH for cell growths of *Bacillus licheniformis* N1, compared with starting pH adjusted at 5.5, continuously control pH at 7.0 and uncontrolled pH in 5% dry biji medium. As results, uncontrolled pH was good growth better than other.

The maximum cells production was obtained from dry biji followed by rice brain after 48h fermentation under same conditions. The optimum rate of biji adding was 5% for 7L jar fermentation, more addition caused aeration problems. The effect of corn starch on cells production was studied. Addition of 5% corn starch in 5% biji was increased cell growth. Optimum harvesting time was about 20 to 22h, because after this time cell density was obviously decreased. Cell number was approximately 1.2×10^{13} cfu/ml at 22h fermentation. The time course of the fermentation process are presented.