KLONING GEN *phyC* PENYANDI *PHYTASE* DARI BERBAGAI GENUS *Bacillus* ASLI INDONESIA

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ABSTRAK

Kloning gen merupakan suatu teknologi rekombinan yang meliputi proses penggandaan *deoxyribonucleic acid* (DNA) melalui perkembangbiakan sel bakteri *host*. Penambahan *phytase* sebagai *feed additive* dibutuhkan oleh monogastrik untuk mendegradasi asam fitat yang menyebabkan terganggunya asupan nutrien karena asam fitat memiliki sifat mampu mengikat (*chelating*) logam penting seperti Ca, P, Mg, Mn, Fe, Zn, dan protein. Penelitian ini bertujuan untuk mengkloning gen *phyC* penyandi *phytase* dari berbagai genus *Bacillus* asli Indonesia. Metode yang digunakan dalam penelitian ini, yaitu pembuatan sel kompeten *Escherichia coli* DH5α (*E. coli* DH5α), perbanyakan gen *phyC* dengan *polymerase chain reaction* (PCR), ligasi gen *phyC* pada plasmid kloning PGEM-T *Easy* dan transformasi dengan metode kejut panas (*heat shock*), serta konfirmasi transforman melalui koloni PCR dan isolasi plasmid. Hasil dari penelitian ini adalah sel kompeten *E. coli* dapat digunakan untuk kloning gen *phyC* dari bakteri *Bacillus sp* 6 dan 7 pada tingkat OD_{600}=0,438 dan transforman *E. coli* pembawa gen *phyC* penyandi *phytase* yang berasal dari *Bacillus sp.* 6 dan 7 dengan ukuran 1149 pasang basa (pb). Hasil ini menunjukkan bahwa kloning gen *phyC* dari *Bacillus sp* 6 dan 7 asli Indonesia berhasil dilakukan.

Kata kunci: Asam fitat, *Bacillus*, Gen *phyC*, Kloning, *Phytase*

CLONING OF phyC GENE CODING PHYTASE FROM VARIOUS Bacillus GENUS ORIGINATING IN INDONESIA

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ABSTRACT

Gene cloning is a recombinant technology that involves the recovery of deoxyribonucleic acid (DNA) through the growth of host bacterial cells. The addition of phytase as a feed additive is required by monogastric to degrade phytic acid which causes a disturbance of nutrient intake because phytic acid has the ability to bind (chelate) important metals such as Ca, P, Mg, Mn, Fe, Zn, and protein. This research aim to clone phyC gene coding phytase from various genus Bacillus native in Indonesia. The methods used in this study were made the competent cell of Escherichia coli DH5α (E. Coli DH5α), the amplification of the phyC gene with polymerase chain reaction (PCR), ligation of phyC gene on the PGEM-T Easy cloning plasmid and transformation with the method of heat shock. PCR colony and plasmid isolation were used to prove the transforman contain plasmid harboring phyC gene. The results of this study were obtained competent E. coli cells could be used to clone the phyC genes of Bacillus sp. 6 and sp. 7 with a rate of OD_{600}=0.438 and the transformant carrier phyC gene derived from Bacillius sp 6 and sp. 7 with a size of 1149 bp. From these results, the study of phyC gene cloning from Bacillus sp 6 and sp 7 was successfull.

Keywords: Bacillus, Cloning, PhyC Gene, Phytase, Phytic Acid.