

P49

Cloning and Expression of the Gene Encoding Trehalose Synthase from *Thermus thermophilus* HJ6 in *Escherichia coli*

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A gene encoding for a putative trehalose synthase (TreS) from *Thermus thermophilus* HJ6 was cloned and expressed in *Escherichia coli*. Tt-TreS gene is composed of 2,898 nucleotides, encoding a protein (966 amino acids) with a predicted molecular mass of 110,560 Da from *T. thermophilus* HJ6. Tt-TreS gene was expressed in *E. coli* codon Plus (DE3) cells by heat shock induction using the pJLA503 vector system. The *E. coli* cells were disrupted by sonication and the supernatant fraction was heat-treated at 85°C for 20min. The recombinant Tt-TreS has a molecular mass of 110.6 KDa, determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and showed an ability to produce trehalose from maltose. [This work was supported by the Marine and Extreme Genome Research Center Program, Ministry of Maritime Affairs and Fisheries, Republic of Korea.]

Key words: *Thermus thermophilus*, trehalose, trehalose synthase, maltose

P50

The Crucial Role of Swine Alveolar Macrophages in Protection against the Challenge of Circulating Human H1N1 Influenza Virus

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Pigs are regarded as an important model for studying pathogenesis of human influenza viruses since they could be readily infected with human influenza viruses. The role of alveolar macrophages in pathogenesis of influenza viruses in humans is largely unknown. Here we show that when pigs depleted of alveolar macrophages in respiratory tracts using liposome-encapsulated clodronate were infected with A/New Caledonia/20/99 (H1N1), pigs suffered from more severe clinical signs compared to control pigs treated with liposome-encapsulated PBS which showed mild clinical signs. When we recorded mortality of pigs, one out of five infected pigs depleted of alveolar macrophages died at 10 days p.i., while no mortality was observed in control infected pigs treated with liposome-encapsulated PBS or PBS only. We observed pigs lung field through R-ray and C-T scanning. The lung of pig depleted alveolar macrophagesumonia signs. H&E staining of lung tissue and necropsy of lung showed same results. Our study suggest that alveolar macrophages in the respiratory tracts in humans may be crucial in controlling influenza infections.