Characterization and vaccination of the cytosolic *Fasciola gigantica* superoxide dismutase

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Superoxide dismutase (SOD) of *Fasciola* spp. belongs to a family of metallo enzymes which are antioxidant enzymes to defend against reactive oxygen species (ROS) from the host's immune cells. Thus, superoxide dismutase is thought to be the target vaccine candidate against *Fasciola* spp. parasite. In this study, the full length cDNA encoding SOD of *Fasciola gigantica* (FgSOD) was cloned from adult parasites by polymerase chain reaction (PCR). The sequence of FgSOD showed 468 bp of an open reading frame (ORF), 60 bp 5’ UTR, 126 bp 3’ UTR and the putative FgSOD peptide comprising of 154 amino acid with a molecular weight of 17.5 kDa and PI 5.45. The recombinant FgSOD was expressed in Escherichia coli BL21 (DE3), purified by Ni-NTA chromatography under native condition. A vaccination was performed in imprinting control region (ICR) mice by subcutaneous injection with 50 µg of rFgSOD combined with Freund's adjuvant. At 2 weeks after the second boost, mice were infected with 15 metacercariae by oral route. IgG1 and IgG2a in the immune sera was determined to indicate Th2 and Th1 immune response. It was found that the parasite burden was reduced by 45% and both IgG1 and IgG2a levels showed correlation with the numbers of worm recoveries.

Biography

Wipaphorn Jaikua is currently pursuing PhD in Pathobiology at the Faculty of Science, Mahidol University, Thailand.

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