

## Abstract

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**Project Code :** TRG5480011

**Project Title :** Production of Recombinant Cathepsin L from *Paragonimus pseudoheterotremus*  
for diagnostic development of paragonimiasis

**Investigator :** Tippayarat Yoonuan

Faculty of Tropical Medicine, Mahidol University

**E-mail Address :** tippayarat.yoo@mahidol.edu

**Project Period :** 2 yers

Cathepsin L is cysteine protease that belongs to papain family. In parasitic trematodes, cathepsin L plays indispensable roles in parasite survival and host-parasite interaction. In this study, cathepsin L of lung fluke *Paragonimus pseudohetrotremus* (PpsCatL) was pioneer identified and characterized its molecular biological and immunological characteristics. The sequence analysis of PpsCatL demonstrated that this gene encodes 325 amino acid residues, which is the most similar to *P. westermani* cathepsin L. *In silico* 3D structure suggested that PpsCatL is pro-enzyme that becomes active when cleavage the pro-peptide. The recombinant pro-PpsCatL without signal peptide (rPpsCatL) was expressed in *E. coli* at the molecular weight of 35 kDa and reacted with *P. pseudohetrotremus*-infected rat sera. The native protein was detected in crude worm antigen, and excretory-secretory product and localized in the caecum with accumulation at lamellae along intestinal tract of adult parasite. Evaluation of immunodiagnostic potential using ELISA suggested

that rPpsCatL could detect paragonimiasis at high sensitivity and specificity (100% and 95.6%, respectively), which supports further development of rPpsCatL-ELISA as immunodiagnostic tool.

**Keywords :** *Paragonimus pseudohetrotremus*, Cathepsin L, recombinant protein, caecum, Enzyme-linked Immunosorbant Assay (ELISA)