Fasciola gigantica is a prevalent trematode parasite of fasciolosis in tropical regions, where it causes serious losses of domestic animals, especially cattle, sheep and goat. The parasite can also infect humans. During development, there are various proteases that the parasites use for migration, invasion, processing of nutrients, and evasion from the hosts’ immune responses. During feeding, the parasites utilize endopeptidases, including cathepsins B, L and D, to digest the host hemoglobin into short peptides. These are then digested by exopeptidases into free amino acids that are absorbed and utilized by the parasites. Leucine aminopeptidase (LAP) is in a family of metalloexopeptidases, which cleave short peptide fragments at the N-terminals. Fasciola gigantica possesses a member of these enzyme and because of its important role in digestion, invasion and migration through the host’s tissues, LAP is considered as a target for vaccine and immunodiagnostic candidate for fasciolosis. In this study, The recombinant protein (rFgLAP) was expressed in prokaryotic expression system. It was then used for immunization of BALB/c mice to produce MoAbs. Reactivity and specificity of this monoclonal antibody was assessed by indirect ELISA and immunoblotting. This MoAb reacted specifically with 56.7 kDa of rFgLAP. Localization of this antigen by immunohistochemistry methods showed that this antigen was presented in the apical cytoplasm of caecal epithelial cells. These findings suggested that FgLAP may be a new candidate for immunodiagnosis for fasciolosis which will be developed by sandwich ELISA method.

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Fig. 1: Localization of FgLAP protein in metacercaria (MET) stage of F. gigantica by immunoperoxidase and immunofluorescence technique showing positive immunoreactivity in caecal epithelial cells.

Fig. 2: Localization of FgLAP protein in newly excysted juvenile (NEJ) stage of F. gigantica by immunoperoxidase and immunofluorescence technique showing positive immunoreactivity in caecal epithelial cells.

Fig. 3: Localization of FgLAP protein in adult F. gigantica by immunoperoxidase technique. (A) The negative control. (B) Sections stained with MoAb showing positive immunoreactivity in caecal epithelial cells. (C,D) High magnification of the tall caecal epithelial cells showing intense positive staining in the apical part of the gut epithelial cells.

Fig. 4: Localization of FgLAP protein in adult F. gigantica by immunofluorescence technique. The negative control (A). (B) Sections stained with MoAb showing positive immunoreactivity in caecal epithelial cells. (C,D) High magnification of the tall caecal epithelial cells showing intense positive staining in the apical part of the gut epithelial cells.