



## Molecular characterization and expression analysis of purple acid phosphatase gene from pearl oyster *Pinctada martensii*

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**ABSTRACT.** Purple acid phosphatases (PAPs), also known as type 5 acid phosphatases, are widely present in animals, plants, and fungi. In mammal, PAP was reported to participate in immune defense and bone resorption. In this study, the characteristics and potential functions of a PAP gene from pearl oyster *Pinctada martensii* (pm-PAP) were examined. The Pm-PAP cDNA was found to be 2777 base pairs, containing a 1581-base pair open reading fragment encoding for 526 amino acids with an estimated molecular mass of 60.1 kDa and theoretical isoelectric point of 5.82. One signal peptide and five conserved motifs [GDXX/GDXXY/GNH(D/E)/XXXH/(A/G)HXXH] were present in the entire sequence. Tissue expression profile analysis showed that pm-PAP mRNA was constitutively expressed in all tissues studied with abundant mRNA found in mollusk defense system, including hepatopancreas, gill, and hemocytes. After lipopolysaccharide stimulation, the expression of pm-PAP mRNA in hemocytes was dramatically upregulated at 2 h and achieved the highest level at 36 h. Additionally, pm-PAP mRNA expression was significantly increased and achieved the highest level

at 2 days after the surgical implantation during pearl production. These results suggest that pm-PAP is a constitutive and inducible protein that may be involved in the immune defense of pearl oyster.

**Key words:** Immune response; Pearl oyster; *Pinctada martensii*; Purple acid phosphatase