



## Molecular cloning, characterization, and expression of vacuolar-type-H<sup>+</sup>-ATPase B1 (*VHAB1*) gene in the gill of *Anguilla marmorata*

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**ABSTRACT.** We explored the molecular mechanism of the regulation of vacuolar-type-H<sup>+</sup>-ATPase B1 (*VHAB1*) in elvers in the response to salinity. The full-length cDNA of *VHAB1* in *Anguilla marmorata* (designated as *AmVHAB1*), which was 1741 base pairs (bp) in length, was found to encompass a 1512-bp open reading frame encoding a polypeptide with 503 amino acids (55.9 kDa), an 83-bp 5'-untranslated region, and a 146-bp 3'-untranslated region. The mRNA and protein expression levels of *AmVHAB1* in the gill were evaluated at different time points (0, 1, 3, 6, 12, 24, 48, 72, and 96 h, and 15 days) during the exposure to various salinity levels (0, 10, and 25‰). The results indicated that the expression levels of *AmVHAB1* mRNA in the gill significantly increased and reached the highest level at 1 h exposure in the brackish water (BW, 10‰) group and at 6 h exposure in the seawater (SW, 25‰) group. The salinity level affected the relative

expression level of *AmVHAB1* mRNA in the gill, which was increased by approximately 44-fold in the SW group when compared with that in fresh water. Immunoblotting analysis showed that VHA expression was significantly higher in the BW and SW groups, with the highest expression level was detected at 96 h exposure. We found that the *AmVHAB1* gene in elvers from *A. marmorata* plays an important role in the adaptation to seawater.

**Key words:** *Anguilla marmorata*; Gill; mRNA and protein expression; Salinity; Vacuolar-type-H<sup>+</sup>-ATPase