



Allelic polymorphism, gene duplication and balancing selection of the MHC class II *DAB* gene of *Cynoglossus semilaevis* (Cynoglossidae)

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ABSTRACT. Major histocompatibility complex (MHC) genes play an important role in the immune response of vertebrates. Allelic polymorphism and evolutionary mechanism of MHC genes have been investigated in many mammals, but much less is known in teleosts. We examined the polymorphism, gene duplication and balancing selection of the MHC class II *DAB* gene of the half-smooth tongue sole (*Cynoglossus semilaevis*); 23 alleles were found in this species. Gene duplication manifested as three to six distinct sequences at each domain in the same individuals. Non-synonymous substitutions occurred at a significantly higher frequency than synonymous substitutions in the PBR domain, suggesting balancing selection for maintaining polymorphisms at the MHC II *DAB* locus. Many positive selection sites were found to act very intensely on antigen-binding sites of MHC class II *DAB* gene.

Key words: Major histocompatibility complex; *Cynoglossus semilaevis*; Allelic polymorphism; Balancing selection