

Expression and characterization of a brain-specific protein kinase BSK146 from zebrafish

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摘要.

Abstract

We have previously identified a novel protein kinase, pk146, in the brain of Tetraodon. In the present study, we cloned the homologous protein kinase gene encoding a protein of 385 amino acid residues from zebrafish. The overall amino acid sequence and the kinase domain of zebrafish BSK146 shows 48% and 69% identity to that of rat sbk, a SH3-containing serine/threonine protein kinase. By whole-mount in situ hybridization and RT-PCR, the expression of bsk146 mRNA was mainly in the brain. To explore the in vivo function of BSK146 during zebrafish development, we used morpholino knockdown approach and found that BSK146 morphants displayed enlarged hindbrain ventricle and smaller eyes. Whole-mount in situ hybridization was further performed to analyze the brain defects in BSK146-MO-injected embryos. The expression of brain-specific markers, such as *otx2*, *pax2.1*, and *krox20*, was found normal in morphant embryos at 24hpf, while expression of *pax2.1* exerted changes in midbrain-hindbrain boundary and hindbrain in morphant embryos at 48hpf. These data suggest that BSK146 may play an important role in later ventricle expansion in zebrafish brain development. Although the recombinant BSK146 protein produced in insect cells was active and could phosphorylate both histone H1 and histone 2B, the endogenous substrate of BSK146 in the embryonic brain of zebrafish is not clear at the present time and needs further investigation