Characterization of two mosquito STATs, AaSTAT and CtSTAT: differential regulationof tyrosine phosphorylation and DNA binding activity by LPS treatment and by Japanese encephalitis virus infection

周志銘

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摘要.

Abstract

Two mosquito STATs, AaSTAT and CtSTAT, have been cloned from Aedes albopictus and Culex tritaeniorhynchus mosquitoes, respectively. These two STATs are more similar to those of Drosophila, Anopheles, and mammalian STAT5 in the DNA binding and Src homology 2 domains. The mRNA transcripts are expressed at all developmental stages, and the proteins are present predominantly at the pupal and adult stages in both mosquitoes. Stimulation with lipopolysaccharide resulted in an increase of tyrosine phosphorylation and DNA binding activity of AaSTAT and CtSTAT as well as an increase of luciferase activity of a reporter gene containing Drosophila STAT binding motif in mosquito C6/36 cells. After being infected with Japanese encephalitis virus, nuclear extracts of C6/36 cells revealed a decrease of tyrosine phosphorylation and DNA binding activity of AaSTAT which could be restored by sodium orthovanadate treatment. Taking all of the data together, this is the first report to clone and characterize two mosquito STATs with 81% identity and to demonstrate a different response of tyrosine phosphorylation and DNA binding of these two STATs by lipopolysaccharide treatment and by Japanese encephalitis virus infection