Abstract

Anaplastic Lymphoma Kinase(Alk) is a receptor tyrosine kinase protein with oncogenic potential. It is found in diverse activated forms in different cancer conditions including cancers in the blood system. However the physiological function of this protein is not well studied in mammalian system due to some constraints such as lack of information of a well defined ligand. In this study, we used the larval hematopoietic organ of Drosophila –the lymph gland as a model to understand the physiological role of Alk in the hematopoietic system. During this study, knocking down Alk from the hematopoietic niche resulted in an increase in niche cell number revealing that Alk functions as a negative regulator of hematopoietic niche cell number. However the loss of Alk from the niche did not affect the functionality of niche which implies that Alk solely regulate the proliferation of the niche cells. Through further analyses we were able to show that Alk could be involved in regulating cell cycle progression from G2 phase of cell cycle. These informations could shed light on the physiological significance of Alk in hematopoietic system. Moreover, we could establish a model that can be used to unravel the mechanistic basis of Alk signaling in normal situation which would further enable to better understand the alterations leading to oncogenesis.