https://doi.org/10.55415/deep-2023-0058.v1

Regulation of the proto-oncogene MYB by long non-coding RNA in leukemia

Mengjie Shi, Yucheng Wang, Chao Liu, Siyu Shen, Junfang Zhang, BingsheHan*

(National Demonstration Center for Experimental Fisheries Science Education, Key Laboratory of Exploration and Utilization of Aquatic Genetic Resources, Ministry of Education, Marine Biomedical Science and Technology Innovation Platform of Lin-gang Special Area, Shanghai, China, 201306)

Abstract: The transcription factor MYB plays vital roles in regulating proliferation and differentiation of hematopoietic progenitor cells, dysregulation of MYB has been implicated in the pathogenesis of leukemia. Although the transcription of MYB has been well studied, its detailed underlying regulatory mechanisms still remain elusive. Our study found that a long non-coding RNA (lncRNA) was transcribed from the -96k region of the *MYB* gene, and the full length was obtained by rapid-amplification of cDNA ends (RACE). Then, overexpression and knockdown vectors of lncRNA were constructed， we found overexpression of lncRNA can promote the transcription and protein synthesis of the *MYB* gene in K562 cells, and proliferation, migration and invasion of K562 cells. However, *MYB* was downregulated through inhibiting expression of lncRNA, and significantly inhibit the proliferation, migration and invasion of K562 cells. Taken together, our data revealed that -96kb lncRNA was required for MYB expression and was transcribed to produce lnRNAs, playing important roles in leukemia initiation and progression.

Keywords: MYB, leukemia, lncRNA, RACE