



PSMC2 Knockdown Inhibits Multiple Myeloma Cell Proliferation and Enhances Apoptosis

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Abstract

Proteasome 26S subunit ATPase 2 (PSMC2) has been identified as being potentially related to certain human cancers. However, the expression levels and functional importance of PSMC2 in multiple myeloma are still uncertain. PSMC2 expression in the levels of mRNA and protein was detected by qRT-PCR and western blot assay. The present study concentrated on clarifying the significance of PSMC2 on multiple myeloma cell behaviors including proliferation, migration and apoptosis by the CCK8 assay, the transwell assay and the flow cytometry. PSMC2 knockdown caused by RNA interference in multiple myeloma cell lines would significantly suppress cell proliferation, migration, enhance apoptosis and arrest cell cycle. Our results reflected that PSMC2 knockdown could inhibit multiple myeloma cell proliferation and enhance apoptosis and that the inhibition of PSMC2 might be a considerable therapeutic strategy for the treatment of multiple myeloma.

Keywords:

multiple myeloma, PSMC2, proliferation, apoptosis, cell cycle

Introduction

Multiple myeloma (MM) is a malignant hematopoietic neoplasm characterized by the proliferation and accumulation of plasma cells in the bone marrow. The pathogenesis of MM is still unclear, but it is generally believed that the disease is caused by the accumulation of genetic mutations in the plasma cells. PSMC2 is a subunit of the 26S proteasome, which is involved in the degradation of ubiquitinated proteins. It has been found that PSMC2 expression is upregulated in various types of cancer, including MM. PSMC2 knockdown has been shown to inhibit cell proliferation and enhance apoptosis in MM cell lines. In this study, we investigated the role of PSMC2 in MM cell proliferation and apoptosis. We found that PSMC2 knockdown significantly inhibited cell proliferation and enhanced apoptosis in MM cell lines. Our results suggest that PSMC2 knockdown may be a potential therapeutic strategy for MM.

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Construction of PSMC2 knockdown cell models

Construction of PSMC2 knockdown cell models

Knockdown of PSMC2 inhibits proliferation of multiple myeloma cells

Knockdown of PSMC2 inhibits proliferation of multiple myeloma cells

Knockdown of PSMC2 inhibits migration of multiple myeloma cells

Knockdown of PSMC2 inhibits migration of multiple myeloma cells

Knockdown of PSMC2 induces apoptosis and arrests cell cycle of multiple myeloma cells

Knockdown of PSMC2 induces apoptosis and arrests cell cycle of multiple myeloma cells

Discussion

Discussion

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Paradoxical resistance of multiple myeloma to proteasome inhibitors by decreased levels of 19S proteasomal subunits. *eLife* 4: e08153.

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