



## SPHINX31 Suppresses Splicing Factor Phosphorylation and Inhibits Melanoma Cell growth and Aggressiveness

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### Abstract

Melanoma is a tumor resulting from the malignant transformation of skin or ocular melanocytes, which is a serious health problem in countries with high UV exposure. Due to the late detection, high invasive and metastatic potentials of melanoma cells, and lack of effective treatments, therefore, poor prognostic in melanoma cases led to high mortality rate among melanoma patients. The aberrant mRNA transcripts derived from alternative splicing has been contributed to the progression of various typed of cancer. Serine/Arginine-riched Splicing Factors (SRSFs) are the proteins responsible for the mRNA splicing under the specific regulation by Serine-Arginine Protein Kinases (SRPKs). This study, the effects of SRPK1-specific inhibitor SPHINX31 was investigated. Cell viability were determined in A375 (cutaneous melanoma cell) compare with 92-1 (ocular melanoma cell) by MTT viability assays. Inhibitory effect of SPHINX31 on melanoma cell viability were presented as dose- and time-dependent manners. Then, western blot analysis was performed to observe the suppression of kinase activity by SPHINX31. Decreasing of phosphorylated SRSFs (pSRSFs) was demonstrated in both cells. Growth inhibition of SPHINX31 was examined by clonogenic assay, the size and number of both A375 and 92-1 cell colonies were decreased. Remarkably, the result of SPHINX31 in other cancer phenotypes were studies in A375 cell regarding to the significant effect in growth inhibition. We found SPHINX31 had reduced the dead-evasion and migration abilities of A375 cell. The collected data should serve as a strong foundation to develop new alternative therapeutic strategies for melanoma treatment by targeting SRPK1 activation.

**Keywords:** *Alternative splicing, Melanoma, Phosphorylation, SRPK1*