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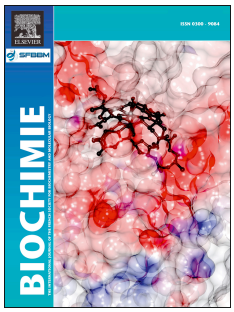

MiR-650 regulates the proliferation, migration and invasion of human oral cancer by targeting Growth factor independent 1 (Gfi1)

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Abstract

Oral cancer being one of the lethal cancers is generally detected at advanced stages and causes significant mortality world over. The unavailability of the reliable biomarkers and therapeutic targets/agents forms a bottleneck in the treatment of oral cancer. MicroRNAs are considered of immense therapeutic potential for the treatment of cancer. Consistently, in this study the role and therapeutic potential of miR-650 was explored in oral cancer. The analysis of miR-650 expression by qRT-PCR revealed significant ($p < 0.05$) upregulation of miR-650 in oral cancer cell lines. Cell cycle analysis by flow cytometery revealed that suppression of miR-650 significantly ($p < 0.05$) inhibits the proliferation of the SCC-25 cells by prompting Sub-G1 cell cycle arrest. Further, miR-650 suppression also inhibited the migration and invasion of the SCC-25 oral cancer cells as revealed by transwell assays. TargetScan analysis showed that miR-650 targets Growth factor independent 1 (Gfi1). Moreover, the results of western blot analysis showed that miR-650 suppression inhibits the expression of Gfi1. Interestingly, suppression of Gfi1 exhibited similar effects on cell proliferation, migration and invasion of the oral cancer cells as that of miR-650 suppression. Nonetheless, miR-650 promoted the proliferation, migration and invasion of the SCC-25 cells by upregulating the expression of Gfi1. Moreover, overexpression of miR-650 could not rescue the effects of Gfi1 silencing on SCC-25 oral cancer cells. Conversely, overexpression of Gfi1 could rescue the effects of miR-650 inhibition on SCC-25 cell proliferation, migration and invasion. Additionally, miR-650 suppression could also inhibit the xenografted tumor growth *in vivo* by inhibiting the expression of Gfi1. Taken together, miR-650 may prove to be an important therapeutic target for the management of oral cancers.

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