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Up-regulation of miRNA-29a is critical for dihydromyricetin-mediated suppression of matrix metalloproteinase-2 and metastatic ability in human oral cancer

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Oral cancer is the most prevalent cancer for middle-aged men in Taiwan and its delayed diagnosis has been shown to be associated with poor survival rates. Therefore, developing a novel natural drug or drug therapy is vital. Dihydromyricetin (DHM), also called ampelopsin is the most abundant flavonoid in *Ampelopsis grossedentata*. However, the anticancer effects and related molecular mechanism of DHM in human oral cancer cells have not been reported. In this study, we investigated the effect of DHM on SCC-9 and SAS oral cancer cells and examined the potential inhibitory mechanisms involved. The results showed that DHM significantly inhibited cell migration and invasion in two oral cancer cell lines. In addition, real-time PCR and western blot analyses suggested that DHM inhibited MMP-2 mRNA and protein expression. Luciferase assay showed that MMP-2 promoter activity was inhibited after DHM treatment. Moreover, a microRNA (miRNA) analysis showed that miRNA-29a was predominantly up-regulated after DHM treatment. Inhibition of miRNA-29a significantly relieved MMP-2 and motility suppression was imposed by DHM treatment. Furthermore, ectopic miRNA-29a expression in highly invasive cells decreased MMP-2 expression and invasive abilities. Taken together, our results provide new insights into the role of DHM-induced molecular and epigenetic regulation in suppressing oral cancer metastasis.

Biography

Chiao-Wen Lin is an Associate Professor of Institute of Oral Sciences, Chung Shan Medical University, Taiwan. She has received her PhD degree in Molecular Biology. In particular, her researches have been focused on pharmacology, cancer metastasis, apoptosis and autophagy in oral cancer. She has published more than 40 papers in reputed journals.

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