

Introduction

Chemoprevention is a modality which uses naturally occurring dietary agents or chemical compounds to intervene in early stages of cancer.

Apigenin is a bioactive compound commonly found in various fruits and vegetables and exhibits anticancer properties. Maspin is a secreted protein encoded by a class II tumor suppressor gene and its role is well established in cell migration. Maspin exerts endogenous inhibitory effects on class I histone deacetylases (HDACs). Class I HDAC levels are increased in prostate cancer, and their aberrant expression correlates with decreased tumor suppressor activity, drug resistance, and poor prognosis. Apigenin has shown to inhibit class I HDAC activity and whether this decrease has an effect on maspin levels has not been elucidated. Here we evaluate the effect of apigenin treatment on maspin expression affecting migration of prostate cancer cells.

Methods

This study utilized human prostate cancer LNCaP and DU145 cells, which were maintained in RPMI 1640 containing glutamine with 10% and 5% FBS, respectively, supplemented with penicillin and streptomycin in a humidified incubator at 37°C with an atmosphere of 5% CO₂. These cells exhibit high levels of class I HDAC activity and expression and low maspin expression. DU145 is a cell line from prostate carcinoma, with moderated metastatic potential, and LNCaP is a cell line from prostate carcinoma with low metastatic potential. The cells were treated with 25 nM trichostatin A and 5-20 µM apigenin for 48 hours.

Migration assay. Migration assay was performed in DU145 and LNCaP cells using 24-well colorimetric cell migration assay kit using TSA and apigenin for various time periods.

Western blotting. Cells from treated and control groups were lysed in RIPA buffer (1% NP 40, 0.5% sodium deoxycholate, 0.1% SDS in PBS) to prepare whole cell lysate and protein was estimated by Protein Assay Reagent.

HDAC enzyme assay. HDAC enzyme activity was determined using 1X Epigenase HDAC Activity/Inhibition Direct Assay Kit obtained from EpiGenteK. HDAC assay was performed following the manufacturer's instructions measuring the color intensity at 450 nm.

The Effectiveness of Apigenin as a Potential Histone Deacetylase Inhibitor

Ira Mehta¹, Eswar Shankar², Albert Lee², Prem Prakash Kushwaha², Sanjay Gupta^{2,3}

¹Lake Ridge Academy, 37501 Center Ridge Rd, North Ridgeville, OH 44039

²Department of Urology, Case Western Reserve University, Cleveland, Ohio 44106

³The Urology Institute, University Hospitals Cleveland Medical Center, Cleveland, Ohio 44106

