Eun Seo Bae, J Cancer Sci Ther 2018, Volume 10
DOI: 10.4172/1948-5956-C1-124

Suppression of the Wnt/β-catenin signaling pathway by Telectadium dongaiense with cytotoxic activities in colon cancer cells

Eun Seo Bae
Seoul National University, South Korea

Abnormal activation of Wnt/β-catenin signaling, which ultimately promotes β-catenin/T-cell factor-(TCF) responsive transcription, plays a crucial role in colorectal tumorigenesis. Thus, the inhibitory effects of various plant extracts on cell proliferation and Wnt signal transduction were evaluated to discover a Wnt signaling inhibitor. The present study aimed to investigate the cytotoxicity involved in Wnt pathway of the MeOH extract from Telectadium dongnaiense bark (TDB) and to identify its bioactive constituents by bioassay-guided fractionation. The sulforhodamine B-based proliferation assay and the β-catenin/TCF-responsive reporter gene assay were employed as screening systems. The isolation and identification of compounds were elucidated on the basis of spectroscopic methods. Inhibitory effects on the expression levels of Wnt target genes were determined by real-time PCR and western blotting. The extract of TDB most strongly inhibited cell proliferation and TOPflash activity, which was correlated with its inhibitory effects on the expression of Wnt target genes. Three major compounds were isolated from bioactive fractions and were identified as 1,4-dicaffeoylquinic acid (1), quercetin 3-rutinoside (2) and periplocin (3). Periplocin only showed anti-proliferative activity (IC50=0.06 μM) and exhibited Wnt signaling inhibitory effects in HCT116 colon cancer cells. This study contributes to understanding the cytotoxic properties of TDB extract and its constituents and provides a potent strategy for its further application.

Biography

Eun Seo Bae has completed her Bachelor's degree from the Hanyang University. She is currently persuing her Master's degree at the College of Pharmacy, Seoul National University. Her works focused on bioactive natural products in the discovery and development of anticancer agents and elucidation of mechanisms of actions with the bioactive compounds.

ddol1289@snu.ac.kr

Notes: