Anti-cancer Activity of the Leave Extracts of *Rodgersia podophylla* through β-catenin Proteasomal Degradation in Human Cancer Cells

Jeong Dong Kim¹, Su Bin Park¹, Ha Na Kim¹ and Jin Boo Jeong¹²*

¹Department of Medicinal Plant Resources, Andong National University, Andong 36729, Korea
²Agricultural Science and Technology Research Institute, Andong National University, Andong 36729, Korea

In this study, we evaluated the effect of *Rodgersia podophylla* leave extracts (RPL) on β-catenin level in human cancer cells. RPL dose-dependently inhibited cell proliferation in SW480, A549, MDA-MB-231, PC-3 and AsPC-1 cells. RPL dramatically decreased β-catenin protein level in all cancer cells. However, decreased level of β-catenin mRNA expression was observed in A549 and AsPC-1 cells. In addition, RPL dramatically attenuated cyclin D1 mRNA expression in all cancer cells. MG132 decreased the downregulation of β-catenin protein level induced by RPL in all cancer cells, while RPL-induced downregulation of β-catenin was inhibited by the inhibition of GSK-3β by LiCl in MDA-MB-231 cells. RPL phosphorylated β-catenin and GSK-3β. In addition, the inhibition of GSK-3β by LiCl attenuated RPL-induced β-catenin phosphorylation. Based on these findings, RPL may be a potential candidate for the development of chemopreventive or therapeutic agents for human cancer.

**Key words:** Anticancer activity, β-Catenin, Cancer chemoprevention, *Rodgersia podophylla*

[This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (NRF-2016R1D1A3B03931713 and NRF-2018R1A6A1A03024862).]