

The Hair Growth-Promoting Effect of Silibinin

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Alopecia, characterized by the loss of hair density or hair thinning, affects the quality of life in millions of people worldwide. Thus, many studies have been conducted to elucidate the mechanisms of hair loss and identify treatment candidates. The falconoid silibinin, extracted from *Silybum marianum*, has antioxidant properties and protective effects against skin damages. However, there has been no studies on the effects of silibinin on hair growth. The purpose of this study is to investigate the effect of silibinin on hair induction in human dermal papilla (DP) cells. Human hair follicle DP cells were three-dimensionally (3D) cultured and seeded on a 96-well microplate. After the formation of the unified spheres, they were treated with silibinin for 48 hours. The size of the spheres were measured with a phase-contrast microscopy. Luciferase reporter assay was used to analyze the activation of

the Wnt/ β -catenin signaling pathways and western blotting was performed to assess the levels of serine/threonine kinase (AKT) protein. The upregulation of DP signature genes, including ALPL, VCAN, BMP2 and FGF7 was investigated through quantitative real time-PCR (qRT-PCR) analysis. Silibinin increased the diameter of 3D DP spheroids and induced AKT activation. Along with this, silibinin-treated DP spheroids significantly indicated activation of the Wnt/ β -catenin signaling pathway. This study also revealed that DP signature genes related with hair induction were upregulated by silibinin in 3D DP spheroids. In conclusion, flavonoid silibinin increases hair proliferation through activation of Akt and Wnt/ β -catenin signaling. For the treatment of alopecia, silibinin may have therapeutic potential.

Biography:

Ji Su Lee is currently working for Konkuk university medical center in South Korea. Lee received the Bachelor's degree in Interior Design from the Yonsei University and received M.D. in Konkuk University, College of Medicine, South Korea. Her current research interests include antioxidant therapy and alopecia in dermatology.