**Anti-wrinkle Activity of *Pinus koraiensis Siebold et Zucc* cone.**

1Ju-Yeong Lee, 2Jung-Woo Chae, 3Dong-Hee Kim, 4Sung-Sook Chun, 5Heui-Dong Park, 4Young-Je Cho\*

1*School of Food science & Biotechnology, Kyungpook National University, Daegu 702-701, Korea*

**2** *Gyeonggi-do Forest Environment Research Institute, Osan 447-290, Korea*

3*Korea Promotion Institute for Oriental Medicine Industry*

*4School of Food science & Biotechnology / Food & Bio-Industry Research Institute, Kyungpook National University, Daegu 702-701, Korea*

*5Institute of Fermentation Biotechnology, Kyungpook National University, Daegu 702-701, Korea*

In this study, used immature *Pinus koraiensis Siebold et Zucc* cone which is a agricultural waste as not being harvested. The experiment was done to find out elastase activity inhibition, MMP-1 and MMP-9 protein produce inhibition for anti-wrinkle effect. Elastase activity inhibition was the highest in *Pinus koraiensis Siebold et Zucc* cone 80% ethanol extract. Procollagenase protein expression in CCD-986sk was checked with western blotting to find out immature cone extract effect on procollagenase expression which is a enzyme for collagen biosynthesis. Each protein expression of transcript factor in immature cone extract applied CCD-986sk cell group increased concentration dependently. Cheking protein expression inhibition effect of MMP-1 and MMP-9 in fibrobalst with western blotting analysis, expression of MMP-1 was noticeably increased on UV-B irradiated control group compared to normal group. As result, immature cone extract inhibits expression of MMP-1 and MMP-9 protein leading to anti-wrinkle effect by inhibiting collagenase and gelatinase. Also showing effect of stimulating recovery in damaged an epithelial cell.

**Key words :** *Pinus koraiensis cone*, *Anti-wrinkle*, elastase, MMP-1, MMP-9