

## Development of Functional Cosmetic Materials from Demilitarized Zone Habiting Plants

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**Abstract :** Demilitarized Zone (DMZ) is a peace region located between South and North Korea border to avoid accidental armed conflict. Because human accessing to the area was forced to be prohibited for more than 60 years, DMZ is one of the cleanest land keeping wild lives as nature itself in South Korea. In this study, we evaluated the biological efficacies of plants (SS, PC, and AR) inhabiting in DMZ for the development of functional cosmetics. First, we tested the cytotoxicity of plant extracts in keratinocyte and melanocyte, which are the major cell components of skin. By 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay with the cell lines, we determined the safety concentrations of the extracts for the efficacy tests. Next, we assessed the anti-wrinkle cosmetic function of SS by demonstrating that SS treatment decreased the expression of Matrix metalloproteinase-1 (MMP-1) in UV-irradiated keratinocytes via real-time PCR. The suppressive effect of SS was greatly potentiated by combination with other DMZ-inhabiting plants, PC and AR. The expression of tyrosinase, which is one the main enzyme that producing melanin in melanocyte, was also down-regulated by the DMZ-inhabiting SS extract. Wound healing activity was also investigated by in vitro test with HaCat cell line, a human fibroblast cell line. All the natural materials extracted form DMZ habiting plants accelerated the recovery of the cells. These results suggested that DMZ is a treasure island of functional plants and DMZ-inhabiting natural products are warranted to develop functional cosmetic materials. This study was carried out with the support of R&D Program for Forest Science Technology (Project No. 2017027A00-1819-BA01) provided by Korea Forest Service (Korea Forestry Promotion Institute).

**Keywords :** anti-wrinkle, Demilitarized Zone, functional cosmetics, whitening

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