ATOPIC ECZEMA/DERMATITIS

APPLICATION OF CITRUS JABARA FRUIT PEELS FOR ATOPIC DERMATITIS: (1) IN VITRO ANTI-INFLAMMATORY EVALUATION

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Background: Citrus jabara is originally grown only in Kitayama village, Wakayama prefecture in Japan, and its fruits has been paid attention as a quite effective anti-allergic functional food. In some cases, uptake of its fruit improved atopic dermatitis (AD) remarkably.

Objective: In this study, we tried to estimate the most effective compound which improve AD in C. jabara fruits. For the alleviation of atopic dermatitis, both anti-allergic and anti-inflammatory effects are important, thus, these effects of its compounds were investigated.

Materials and Methods: Flavonoids were isolated from C. jabara fruit peels, and chemical structures were determined by comparison of physical data and NMR spectral data with articles. Anti-inflammatory effects of these isolated compounds and aglycone were estimated by lipopolysaccharide (LPS)-stimulated RAW 264 mouse macrophage-like cell assay, and by LPS or trypsin-simulated human keratinocyte-like cell assay. Their inhibitory effects of inflammation related enzymes were also evaluated.

Results: Fifteen flavonoids were isolated from C. jabara fruit peels, but more than 99% of flavonoids was narirutin. Tested compounds dose-dependently inhibited the synthesis of nitric oxide, inducible nitric oxide synthase, Interleukin-6 (L-6), and tumor necrosis factor α in LPS-simulated macrophage-like cells, and IL-6 and 8 in LPS or trypsin-simulated keratinocyte-like cells. Soluble epoxide hydrolase and hyaluronidase were also inhibited by tested compounds dose-dependently. These Inhibitory effects were not so high in narirutin, but enough high in its aglycone naringenin.

Conclusions: Anti-inflammatory effects of narirutin was not so high, but, its aglycone naringenin inhibited both synthesis of inflammatory mediators and activities of inflammation related enzymes. Since narirutin is deglycosylated to naringenin, it is considered that narirutin exists like a prodrug and its aglycone naringenin works as an active form in a living

body at oral ingestion of C. jabara fruit peels.