

学位論文要旨 Dissertation Abstract

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学位論文題目： Study on bio-active substances in plants
Title of Dissertation (植物の生理活性物質に関する研究)

学位論文要旨：
Dissertation Abstract

The medical functions of plants had been used for rescue diseases from the very beginning of human history. In this thesis, two kinds of plants had been evaluated their bioactivities respectively.

In chapter 2, a plant from Kochi has been researched for its tyrosinase-inhibition activity and the bio-active compounds have been isolated. *Diplomorpha sikokiana*, a plant species from the Thymelaeaceae family is widely distributed in Japan and is used for making Japanese paper. In part I, I found that the methanol extract of *D. sikokiana* showed tyrosinase-inhibition activity and therefore three compounds, 3-(2,4-dihydroxyphenyl)propionic acid (DDPA), caffeic acid and syringic acid were isolated by bioassay guided separation. Of these compounds, DDPA was the main active compound and the others were stabilizers to the activity of DDPA.

In Part II, I evaluated the synergistic effect on tyrosinase-inhibition activity with DDPA and L-ascorbic acid (Vitamin C). The results indicated that the synergistic effect was significant on tyrosinase inhibition. The value of IC_{50} was also decreased to 1/10 compared with the single compound. Since L-ascorbic acid has multi-bioactivities, the results firstly suggest the synergy effect with L-ascorbic acid and DDPA could be used on medical and cosmetic fields.

In chapter 3, a Chinese traditional medicine has been studied for Angiotensin I-converting enzyme inhibitory activity. The Chinese medicinal herb *Trichosanthes kirilowii* Maxim. Roots (Radix Trichosanthis), which has been used clinically in China to treat hydatidiform moles, trophoblastic carcinomas, and ectopic pregnancies, and to interrupt early and midtrimester pregnancies. In this study, two kinds of gluco-amino

acid compounds, N^{α} -(1-deoxy-D-glucose-1-yl)-L-citrulline and N^{δ} -(1-deoxy-D-glucose-1-yl)-L-arginine, have been isolated and synthesized. The IC_{50} of N^{α} -(1-deoxy-D-glucose-1-yl)-L-citrulline and N^{δ} -(1-deoxy-D-glucose-1-yl)-L-arginine were 0.12 mg/mL and 0.65 mg/mL. It is the first time to develop a new application of Radix Trichosanthis on ace-inhibitor and two kinds of gluco-amino acid compounds were proved to have an ace-inhibitor activity. The molecular was small and only one amino-acid was consisted which suggested that it could be designed for an oral administration.