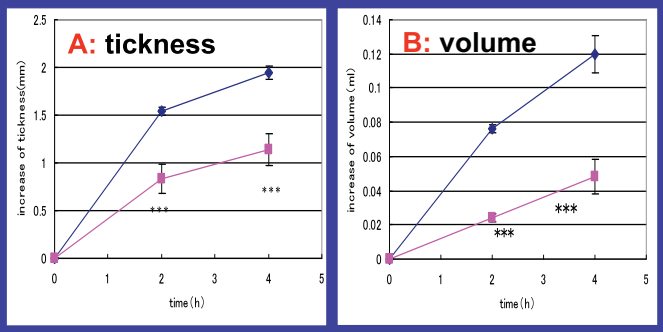
Anti-inflammatory activity of *Dictyopteris undulata* on Acute Inflammation in animal models

Tatsuki HIROSE, Tomoyuki KOYAMA, and Kazunaga YAZAWA
Laboratory of Nutraceuticals and Functional Foods Science,
Graduate School of Marine Science and Technology,
Tokyo University of Marine Science and Technology, Tokyo, Japan

Dictyopteris undulata **is one of the brown alga ranged in the sea off Japan. Its zonal body with midrib is bistre-colored, but it shines fluorescent turquoise in the water. In this study, we found anti-inflammatory activity of *D. undulata* on acute inflammation in mice. The extract (1000 mg/kg, p.o.) produced a significant inhibition in 1% carrageenin-induced hind paw oedema volume and thickness as compared to the control mice (Fig.1).**

Fig1. Inhibitory effects in carrageenan-induced paw edema mouse model (*In vivo*)



Each value represents mean ± S.E.(*n*=5). ＊＊＊:p＜0.005 vs. control

◆: control (corn oil)
■: crude extract of *D. undulata* (1,000 mg/kg)

Fig2. Isolation of inhibitory compound for nitric oxide (NO) production.

Fraction confirmed activity is expressed

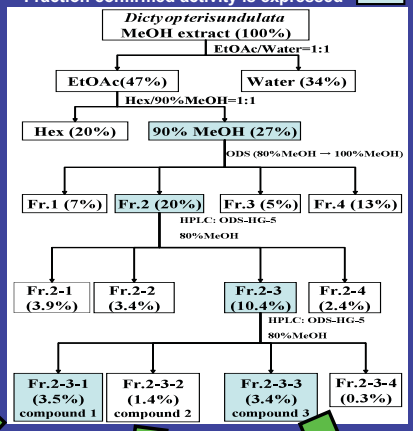
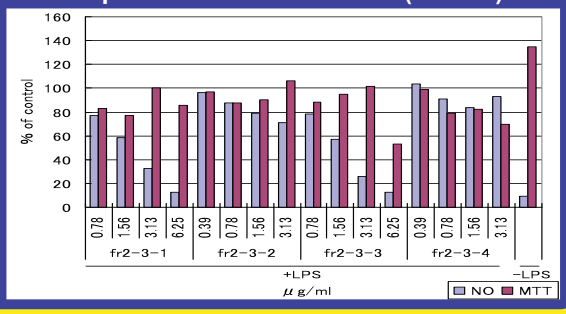
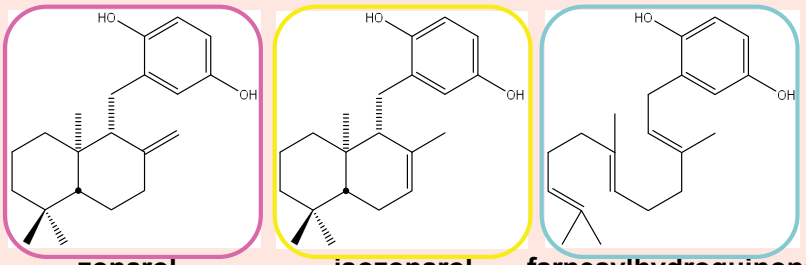


Fig.3 Effect of each compounds on LPS-induced NO production in RAW264.7 (*in vitro*)

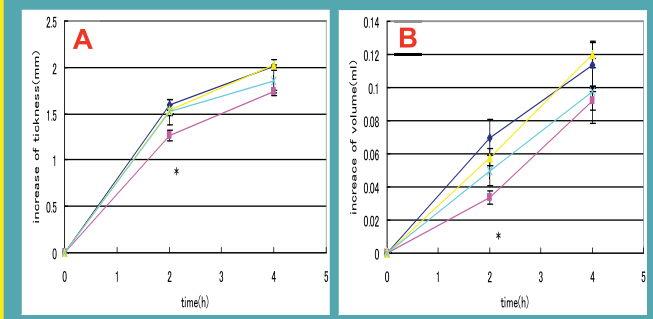


compound 1 **compound 2** **compound 3**



zonarol **isozonarol** **farnesylhydroquinone**

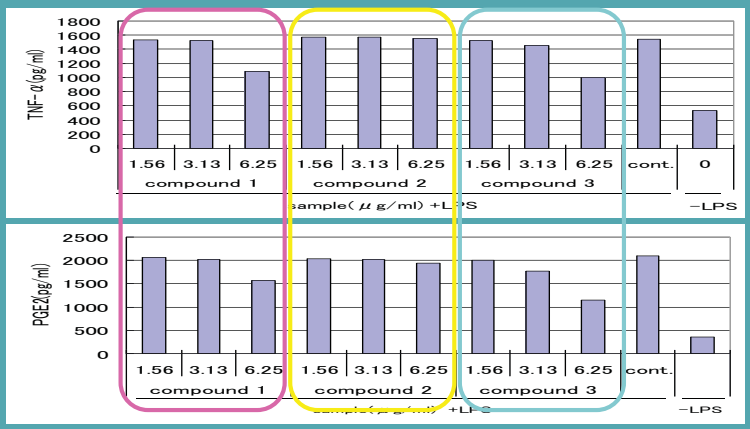
Fig.4 Inhibitory effect of each compounds in the carrageenan model mouse (*in vivo*)



Each value represents mean ± S.E.(*n*=5). ＊:p＜0.05 vs. control

◆: control
▲: comp. 2 (20 mg/kg)
■: comp. 1 (62.5 mg/kg)
×: comp. 3 (62.5 mg/kg)

Fig.5 Effect of each compounds on LPS-induced TNF-alpha and PGE2 production in RAW264.7 (*in vitro*)



Each value represents mean ± S.E.＊:p＜0.05、＊＊:p＜0.01、＊＊＊:p＜0.005 vs. control

conclusion

In this study, we found anti-inflammatory activity of *Dictyopteris undulata* on acute inflammation in mice and isolated ant-inflammatory compound, zonarol, from it. Further pharmacological research will be required.