CONFIDENTIAL

Summary

In Vitro Study on the antioxidant activity of Olivenol™, Olive Pulp Extract

Hirofumi Fujita[1)], Yoshiki Takehara[2)], Shikibu Muranaka[1)],
Takuzo Fujiwara[1)], Jitsuo Akiyama[3)] and Kozo Utsumi[1)]

1) Institute of Medical Sciecne, Kurashiki Medical Center, Kurashiki 710-8522, Japan and
2) Department of Food and Nutrition, Faculty of Human Services, Okayama Gakuin University, Kurashiki 710-8511, Japan
3) Doonan Institute of Medical Science, Akiyama Memorial Hospital

Running title: Antioxidant activity of Olivenol™

The antioxidant activities of Olivenol™ (an extract of olive) and hydroxytyrosol (a main polyphenol component in Olivenol™) were measured in vitro by Electron spin resonance (ESR) spectroscopy using DMPO for superoxide and hydroxyl radial and carboxy-PTIO for nitric oxide. Superoxide, hydroxyl radical and NO were generated by hypoxanthine/xanthine oxidase system, Fenton reaction and NOC18, respectively. The free radical-mediated oxidations of mitochondrial membrane lipids in aqueous suspension was also measured by thiobarbituric acid reaction. Olivenol™ and hydroxytyrosol suppressed the DMPO/˙OOH signal in ESR signal in a concentration dependent manner. The suppressing activity in hydroxytyrosol was weaker than that of Olivenol™, which contained same amount of hydroxytyrosol. However, Olivenol™ did not suppress the DMPO/˙OH signal in ESR. Olivenol™ suppressed the PTIO signal for NO in a concentration dependent manner. The suppressing activity toward PTIO signal was 12 times higher than that for DMPO/˙OOH. Olivenol™ also suppressed the lipid peroxidation induced by both Fe^{2+} and SIN-1 generated $ONOO^-$. The suppressing activity of Olivenol™ toward $ONOO^-$-lipid peroxidation was 260 times higher than that of Fe^{2+}. Kinetic analysis showed that the mechanism of the suppression might be due to scavenging activity against NO. These results suggested that Olivenol™ isolated from the Olive has an antioxidant activity to prevent from stress related diseases.

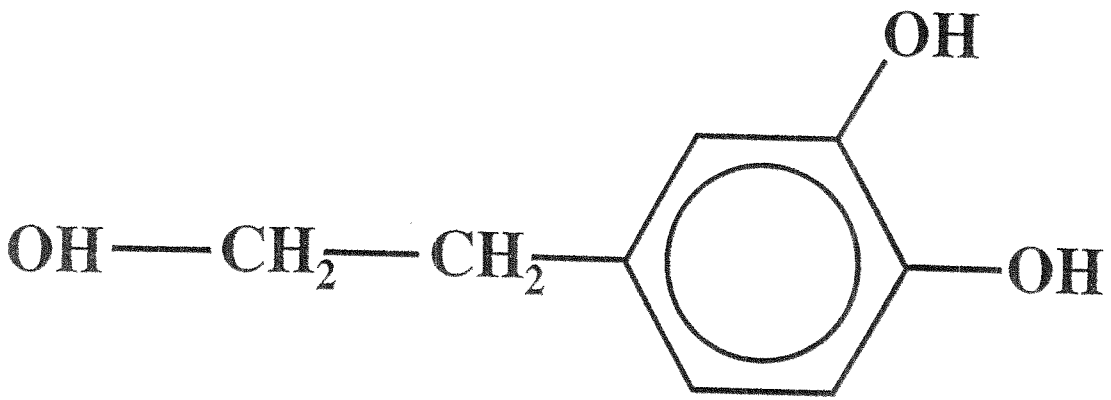

Fig. 1

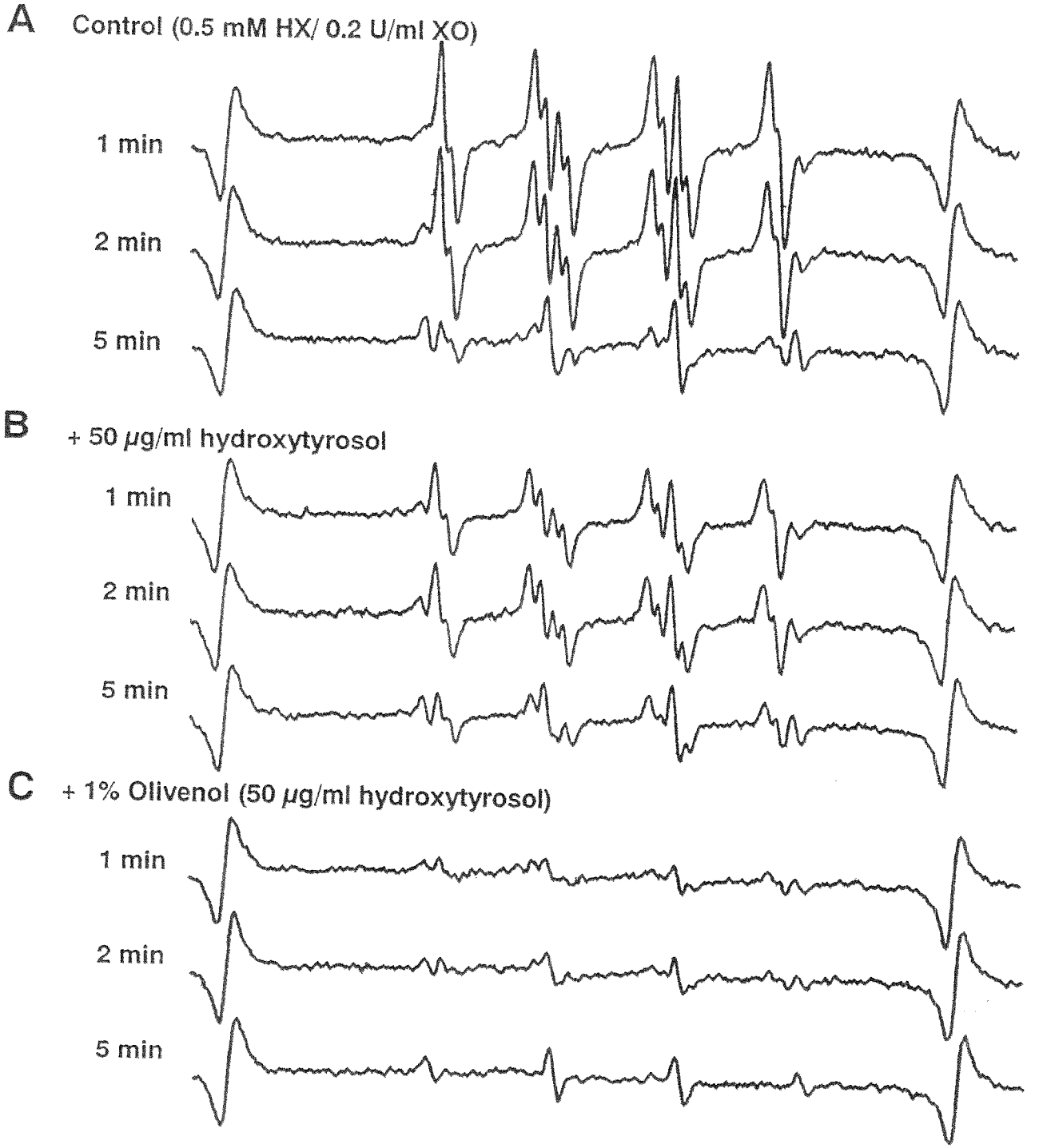

Fig. 3

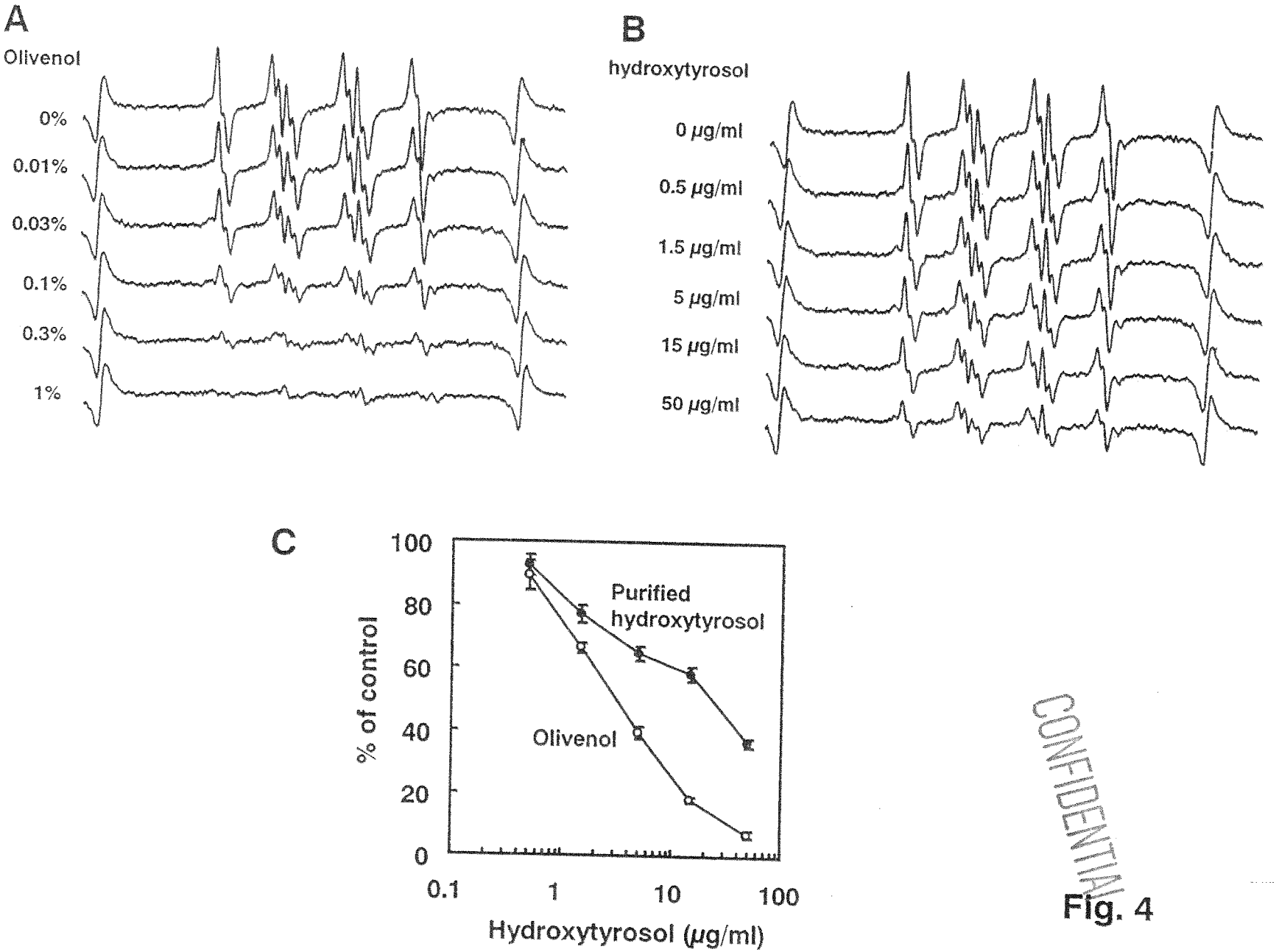

Fig. 4

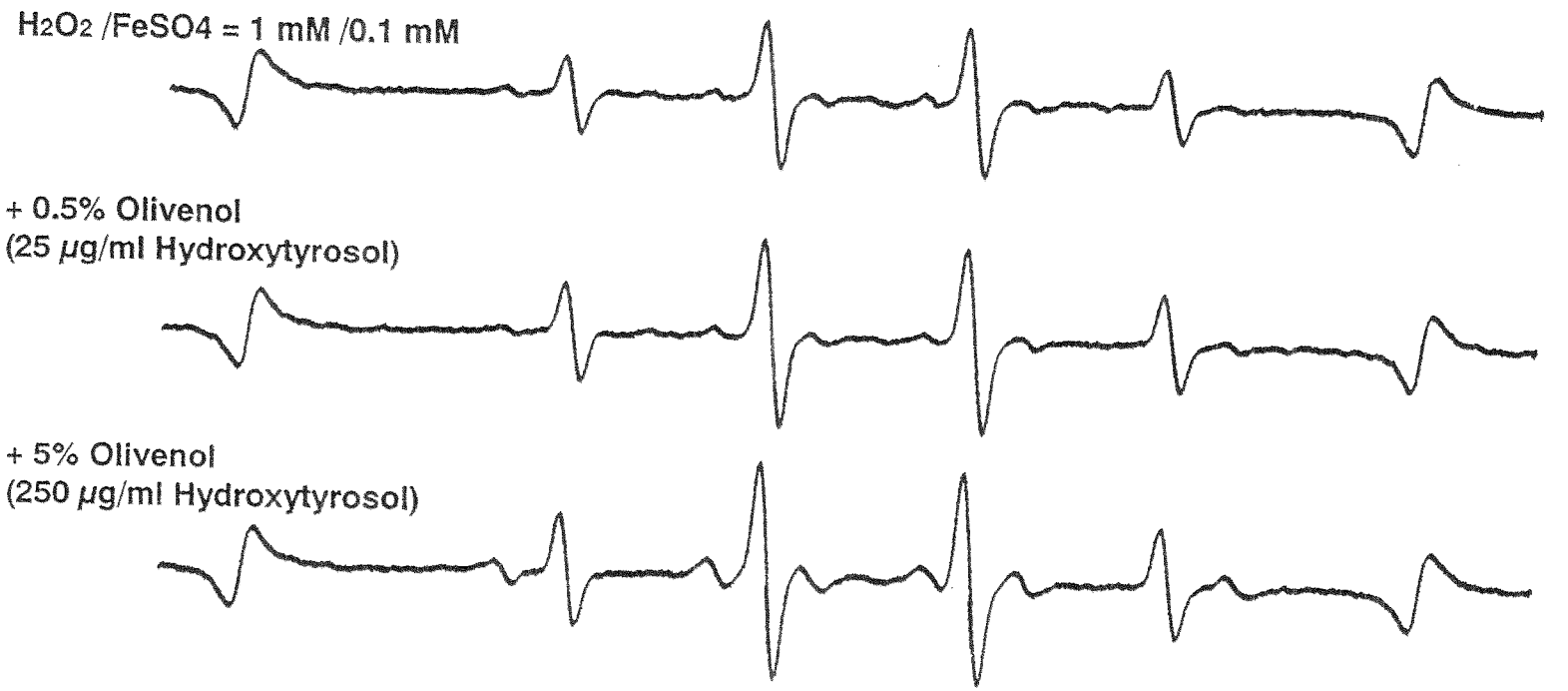

Fig. 5

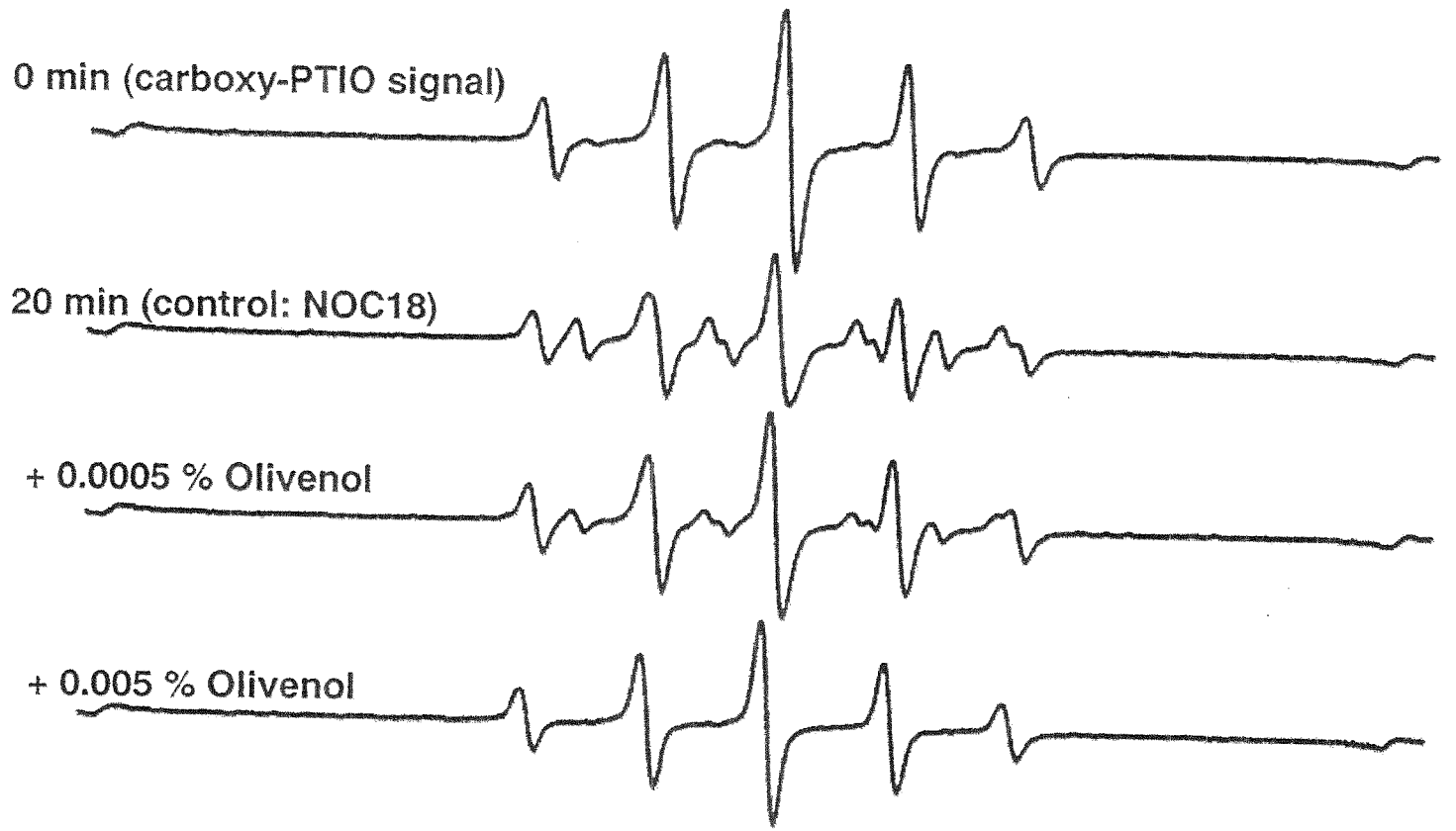

Fig. 6

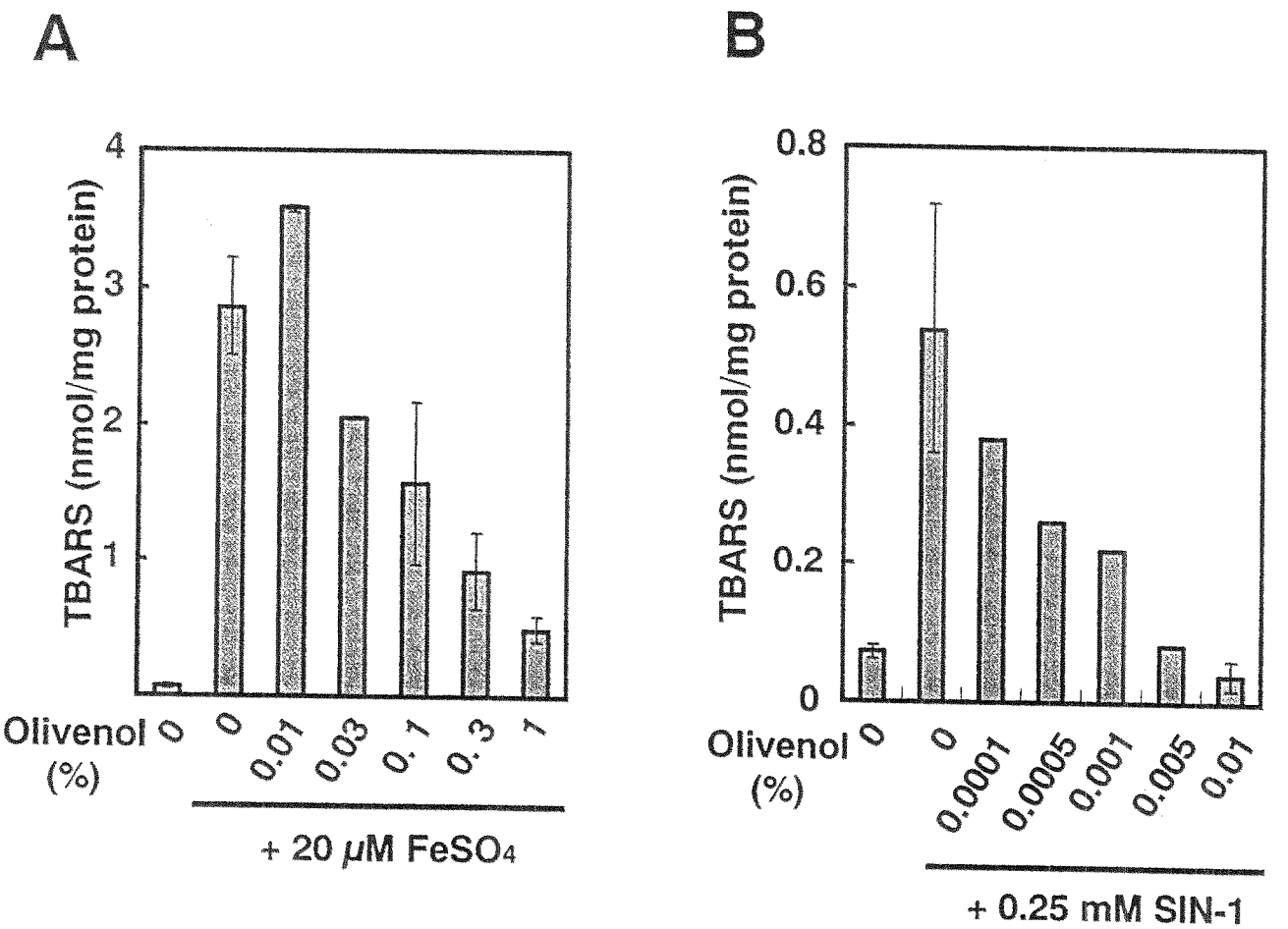

Fig. 7