

# Effects of Prouision on scavenging free radicals

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## AIM:

To detect the effects of Prouision on hydroxyl free radical and superoxide free radical in vitro.

## METHODS:

Prouision: natural porous ore material with some biological functions found in Japan, Japan Patent Application Number: BFC4j (B2002-52397). Prouision-A, B, C (P-A, P-B, P-C), offered by Dr. M. Hashimoto, were the powders mixed of these porous ore in different proportion (grey powder,  $d < 3 \mu\text{m}$ ). The effects of prouision on hydroxyl free radical and superoxide free radical were determined by the assays of deoxyribose and xanthine oxidase, respectively. Their direct effects on these free radicals were also checked with the Electron Spin Resonance (ESR)(Fudan Test Center).

## RESULTS:

1. Effects of Prouision on scavenging hydroxide free radicals. (see Tab.1 and Fig)

Tab.1 Effects of P-A,B,C on scavenging hydroxide free radical in vitro with assay of deoxyribose. ( $\bar{x} \pm s, n=3$ )

concentration	A-inhibition%	B-inhibition%	C-inhibition%
0	0	0	0
0.05469 g/L	20.24	16.04	22.47
0.10938 g/L	27.55	18.72	27.44
0.21875 g/L	44.64	27.54	42.54
0.4375 g/L	56.19	43.98	58.01
$Y = a + b x$	$Y = 18.1 + 92.9 X$	$Y = 6.51 + 89.9 X$	$Y = 10.6 + 119.0 X$
R	0.9653	0.9635	0.9426
IC <sub>50</sub>	0.2209 g/L	0.2962 g/L	0.2183 g/L
95%confidence limit	0.0989-0.5367 g/L	0.1302-0.6741 g/L	0.8895-0.5322 g/L

The actions of Prouision on the hydroxide free radical were dose-dependent and their order for the actions was C>A>B. The results of the deoxyribose assay were confirmed by the ESR determination.

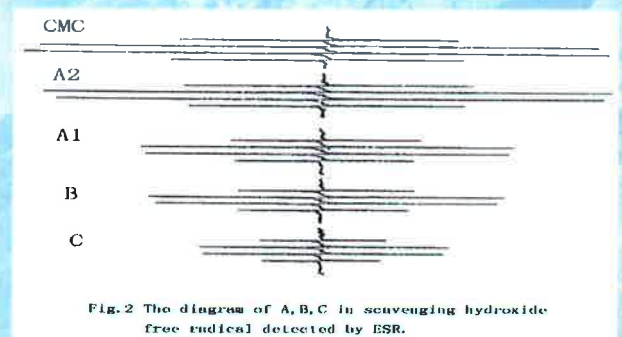


Fig.2 The diagram of A,B,C in scavenging hydroxide free radical detected by ESR.

\*CMC = 0.2%, A1 =  $1.4 \times 10^{-3} \text{g/L}$ , A2 =  $3.5 \times 10^{-4} \text{g/L}$ , B =  $1.4 \times 10^{-3} \text{g/L}$ , C =  $1.4 \times 10^{-3} \text{g/L}$

2. Effects of Prouision on scavenging superoxide free radical. (see Tab.2)

Tab.2 Effects of Prouision on scavenging superoxide free radical in vitro with assay of xanthine oxidase. ( $\bar{x} \pm s, n=3$ )

concentration	A-inhibition%	B-inhibition%	C-inhibition%
0	0	0	0
0.05645 g/L	0	3.2	1.85
0.1129 g/L	8.2	5.33	9.26
0.2258 g/L	23.68	12.27	20.14
0.4516 g/L	34.74	52.27	50.69
$Y = a + b x$	$Y = 0.8645 + 83.78 X$	$Y = -5.03 + 116 X$	$Y = -3.16 + 115 X$
R	0.9719	0.9618	0.9932
IC <sub>50</sub>	0.4025 g/L	0.3854 g/L	0.3626 g/L
95%confidence limit	0.2065-0.7847 g/L	0.2041-0.7276 g/L	0.1823-0.7213 g/L

The inhibitions on the superoxide free radicals produced by P-A, P-B and P-C were also in the dose-dependent manner and their action order was C>B>A. The detection by ESR showed the similar results, confirming the results of xanthine oxidase assay.

## CONCLUSION:

The prouisions had the properties scavenging hydroxide and superoxide free radicals.