

Superoxide anion Tetracycline-HCl

I.

⁶⁾. O_2^-

nicotinamide adenin dinucleotide
phosphate(NADPH) hexose
monophosphate shunt

⁶⁾.

1).

가

⁵⁾.

2)

가, hexose

Bartold ⁷⁾

monophosphate shunt

(O_2^- , H_2O_2 , OH^- , NO

HOCl)

가
acid

hyaluronic

(depolymerization)

(respiratory

burst)

³⁾.

가

, Seymour

⁸⁾

H_2O_2 superoxide anion(O_2^-)

(spontaneous dismutation),

. sman ⁹⁾

(superoxide dismutase :

SOD)

, glucose glucose

가

oxidase

⁴⁾,

가

, Shapira ¹⁰⁾

elastase

가

OH^- classic Haber - Weiss reaction⁵⁾,

Fenton reaction

O_2^-

가

lipid peroxide O_2

, Kimura ¹¹⁾

,

가 1.

가 11 (:23 - 28 , :24.9)
가 , 1

2.

(1)

60ml
, 50ml one -
step Ficoll - Hypaque gradient centrifugation
method²⁰⁾

가

, Gabler ¹²⁾

10ml
1,500rpm 5
(SORVALL RT6000D, DUPONT, U.S.A.)
56

Tetracycline

O₂⁻ 가

Tetracyclines

30

G(+),(-)

Gey's Balanced Salt

13,14),

15,16,17),

Solution(GBSS)

Hemocytometer

18).

O₂⁻

(2) Superoxide anion

12).

Eppendorf tube (8 × 10⁶ /
Mℓ) GBSS ,

1,000mg/Mℓ

1 μg/Mℓ

P.gingivalis strain

Tetracycline

A7436 LPS(Baylor University, College of
Dentistry, Dr. Christopher W. Cutler),

O₂⁻

5% 가 ,

19)

Tetracycline -

(5, 10, 50, 100 μg/Mℓ) Tc - HCl 가

HCl(Tc - HCl)

GBSS 1Mℓ

O₂⁻

37 5 , 30 , 60 , 120

O₂⁻

II.

(3)

Table 1. O₂⁻ concentration according to Tc - HCl concentration(mean±S.D.)

Groups	O ₂ ⁻ Concentration(n molesO ₂ ⁻ / 5 × 10 ⁵ PMNs)
Control	0.158 ± 0.013
Tc - HCl 5µg/Mℓ	0.132 ± 0.005*
Tc - HCl 10µg/Mℓ	0.131 ± 0.012*
Tc - HCl 50µg/Mℓ	0.118 ± 0.011*
Tc - HCl 100µg/Mℓ	0.116 ± 0.012*

*:p<0.05 compared to Control

Table 1. O₂⁻ genevation in the course of time after treatment with concentrations of Tc - HCl(mean±

	O ₂ ⁻ Concentration(n molesO ₂ ⁻ / 5 × 10 ⁵ PMNs)			
	5 minutes	30 minutes	60 minutes	120 minutes
Tc - HCl 5µg/Mℓ	0.140 ± 0.001	0.030 ± 0.003	0.015 ± 0.000	0.015 ± 0.005
Tc - HCl 10µg/Mℓ	0.107 ± 0.008	0.041 ± 0.005	0.039 ± 0.015	0.009 ± 0.003
Tc - HCl 50µg/Mℓ	0.134 ± 0.010	0.038 ± 0.007	0.024 ± 0.001	0.013 ± 0.004
Tc - HCl 100µg/Mℓ	0.137 ± 0.002	0.046 ± 0.018	0.020 ± 0.004	0.010 ± 0.001

(4) Superoxide anion O₂⁻ , Tc - HCl 가 (5) Tc - HCl 가 O₂⁻ paired t - test , Tc - HCl 가 one - way ANOVA Tukey test , Tc - HCl Repeated Measurement test , p<0.05 SPSS/PC+ .

96 - well microplate 가 200µℓ가 (5 × 10⁵ /200µℓ), GBSS 0.3mg/Mℓ cytochrome C 1 µM fMLP(formylmethionyl - leucyl - phenylala - nine) Microplate Autoreader (BIO - TEK™ Instrument Inc.) 540nm 1. Tc-HCl O₂⁻ Tc - HCl 가 O₂⁻ (p<0.05). Tc - HCl 가 (p>0.05) (Table 1).

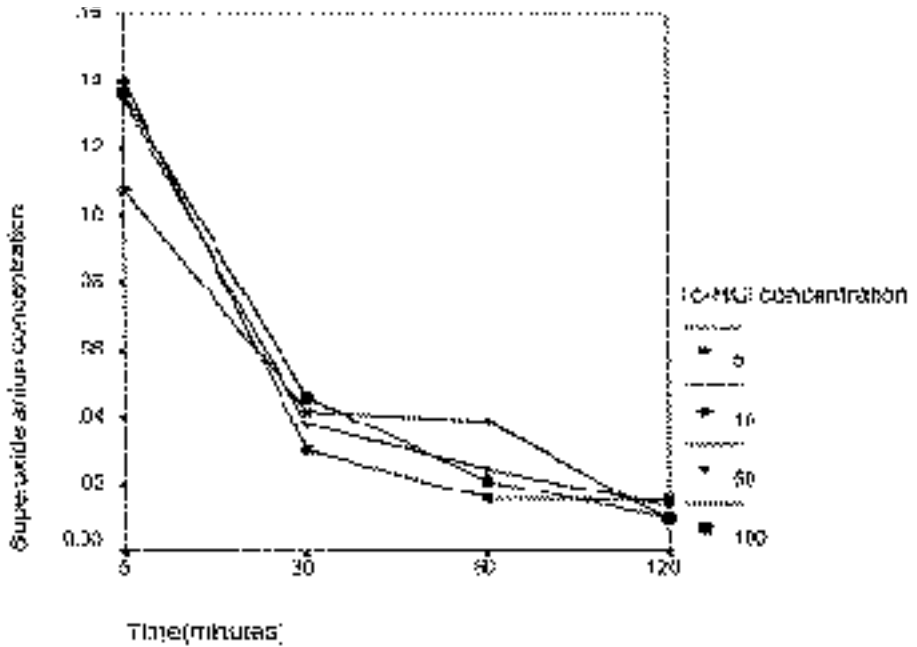


Fig 1. Change of O_2^- concentration in the course of time after treatment with various concentrations

2. Tc-HCl O_2^- O_2^- , H_2O_2 OH^- ²²⁾
 Tc - HCl , O_2^- , OH^-
 가 Tc - HCl 가
 O_2^- ²³⁾
 (p<0.05) (Table 2 Fig. 1). 가

IV. ³⁾
 priming
 O_2^- P.gingivalis strain
 A7436 LPS serum, fMLP
 Champagne ²⁴⁾ in vitro LPS가
 acid pH, ²⁵⁾
 cationic proteins, lysozyme, neutral pro-
 tease lactoferrin , Guthire
 , lactoferrin OH^- Opdahl ²⁶⁾ LPS가
 priming oxidative burst

Guthrie ²⁵⁾ 10
100ng/ml LPS priming , Shapira ²⁷⁾ 30µg/Mℓ ³¹⁾ Tc - HCl
100ng/ml , 1µg/Mℓ LPS priming O₂⁻ HCl , Tc - 가
, priming 1µg/Mℓ LPS 가 Tc - HCl O₂⁻
LPS 가 Tc - HCl Tc - HCl
, Aida ²⁸⁾ LPS Agarwal ¹⁹⁾ . Agarwal
, LPS priming activity가 ¹⁹⁾ 가
56 30 . Miyachi ³²⁾
가 . Shapira 100µg/Mℓ
²⁷⁾ LPS Tc - HCl O₂⁻ 100µg/Mℓ
LPS , Tc - HCl O₂⁻ O₂⁻
, 5% O₂⁻
56 30 5% Tc - HCl O₂⁻ 가 ,
Tetracycline 가
O₂⁻ ¹⁹⁾ O₂⁻ Tc - HCl 가
Tc - HCl Tc - HCl O₂⁻
Tc - HCl O₂⁻
10, 50, 100µg/Mℓ Tc - HCl 5, , LPS
HCl Tc - 가
가 5 10µg/Mℓ 8,13,29,30), 가

V.

Tc - HCl
O₂⁻

(23 - 28 , :24.9)11
60Mℓ
one - step Ficoll - Hypaque
gradient centrifugation method
, superoxide dismutase(SOD) - inhibitable
cytochrome C reduction method

O₂⁻
Microplate Autoreader

Tc - HCl O₂⁻

1. Tc - HCl 가
O₂⁻
(p<0.05). O₂⁻
Tc - HCl
(p>0.05).
2. 가 Tc - HCl
O₂⁻
(p<0.05).

Tc - HCl
O₂⁻

가 Tc - HCl

VI.

1. , , “
S.O.D Catalase

25 , 1 :167 - 176, 1995.

2. , , “
glutathione peroxidase
catalase
25 , 3 :529 - 536,
1995.

3. , , “
Superoxide
Dismutase Catalase
24 , 1
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