

新しい二酸化窒素反応性窒素様種の生体内発生とその防御機構の解明

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2001 Fiscal Year Final Research Report Summary

Elucidation of internal generation of new nitrogen dioxide-like species and its defense mechanisms.

Research Project

Project/Area Number

11307006

Research Category

Grant-in-Aid for Scientific Research (A)

Allocation Type

Single-year Grants

Section

一般

Research Field

Hygiene

Research Institution

Kanazawa University

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Keywords

eosinophil / peroxidase / nitrotyrosine / immunohistochemistry / NC / Nga mouse / Eol-1 / reactive nitrogen species / heme

Research Abstract

The pathophysiological significance of free-tyrosine or protein-bound tyrosine nitration by the generation of reactive nitrogen species via eosinophil peroxidase was investigated with eosinophils, eosinophil-derived leukemia cells or atopic dermatitis-like-NC/Nga mice. Regarding the immunohistochemical staining method, artifact were

occasionally observed in NC/Nga mice and the susceptibility of nitrotyrosine staining in eosinophils by reactive nitrogen species derived from adjacent cells were demonstrated. Therefore, it was speculated that eosinophils have a role in the scavenging of reactive nitrogen species. We demonstrated that the expression of myeloperoxidase in human eosinophilic leukemia cell line (Eo1) occurred when the cells were degenerated by butyric acid and when the ability of nitrotyrosine formation was detected after cytospin preparations of the cells with H₂O₂ and NO₂ contrary to the expectation of eosinophil peroxidase expression. Moreover, in further investigations into the localization of peroxidase responsible for the nitration of tyrosine in rat organs, two peroxidases were recognized. One is eosinophil peroxidase found in the gastrointestinal tract and the other is an unknown peroxidase-like that found in the lungs, spleen and heart. In the heart, an unknown peroxidase-like enzymes or the heme protein contributed for the nitration of tyrosine was localized in myocytes.

Research Products (15 results)

All Other
All Publications

[Publications] Nakamura H, Nagase H, Ogino K, Hatta K, Matsuzaki I: "Uteroplacental circulation disturbance mediated by prostaglandin f2alpha in rat exposed to microwaves"Reprod Toxicol. 14. 235-240 (2001) ▼

[Publications] Ogino K, Kodama N, Nakajima M, Yamada A, Nakamura H, Nagase H, Sadamitsu D, Maekawa T: "Catalase catalyzes nitrotyrosine formation from sodium azide and hydrogen peroxide"Free Radic Res. 35. 735-747 (2001) ▼

[Publications] Nakamura H, Ogawa Y, Nagase H, Nakajima M, Kodama N, Ogino K, Oshita Y: "Natural killer cell activity and its related psychological factor, sense of coherence in male smokers."J Occup Health. 43. 191-198 (2001) ▼

[Publications] Nakajima M, Takeuchi T, Ogino K, Morimoto K: "Lack of direct involvement of 8-hydroxy-2'-deoxyguanine in hypoxanthine-guanine phosphoribosyltransferase mutagenesis in V79 cells treated with N, N'-bis(2-hydroxyperoxy-2-methoxyethyl)-1,4,5,8-naphthalenetetracarboxylicimide(NP-III) or riboflavin"Jpn J Cancer Res. 93. 247-252 (2002) ▼

[Publications] Ogino K, Nakajima M, Kubao M, Kimura S, Nagase H, Nakamura H: "Immunohistochemical artifact for nitrotyrosine in human eosinophil or eosinophil containing tissue"Free Radic Res. 36. 1163-1170 (2002) ▼

[Publications] Kodama N, Kambayashi Y, Kubo M, Kimura S, Nakamura H, Ogino K: "Induction of myeloperoxidase and nitrotyrosine in human eosinophilic leukemia cell line, Eo1"Cell Biochem Funct. (in press). ▼

[Publications] 神林康弘, 荻野景規: "TECHNICAL TERM 消化管"先端医学社. 2 (2002) ▼

[Publications] Nakamura H, Nagase H, Ogino K, Hatta K, Matsuzaki I: "Heat produces uteroplacental circulatory disturbance in pregnant rats through action of corticotropin releasing hormone (CRH)"Placenta. 21. 510-515 (2000) ▼

[Publications] Nakamura H, Nagase H, Ogino K, Hatta K, Matsuzaki I: "Uteroplacental circulatory disturbance mediated by prostaglandin f2alpha in rat exposed to microwaves."Reprod Toxicol. 14. 235-240 (2001) ▼

[Publications] Nakamura H, Nagase H, Ogino K, Hatta K, and Matsuzaki I: "Involvement of central, but not placental corticotropin releasing hormone (CRH) in heat stress-induced immunosuppression during pregnancy"Brain Behav Immun. 15. 43-53 (2001) ▼

[Publications] Ogino K, Kodama N, Nakajima M, Yamada A, Nakamura H, Nagase H, Sadamitsu D, Maekawa T: "Catalase catalyzes nitrotyrosine formation from sodium azide and hydrogen peroxide."Free Radic Res. 35. 735-747 (2001) ▼

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