Generation mechanisms of nitrogen dioxide-like species from cardiovascular system.

2004 Fiscal Year Final Research Report Summary

Generation mechanisms of nitrogen dioxide-like species from cardiovascular system.

Research Project

Project/Area Number

14370120

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

一般

Research Field

Hygiene

Research Institution

Kanazawa University

Principal Investigator

OGINO Keiki Kanazawa University, Graduate School of Medical Science, Professor, 医学系研究科, 教授 (70204104)

Co-Investigator(Kenkyū-buntansha)

KAMBAYASHI Yasuhiro Kanazawa University, Graduate School of Medical Science, Lecturer, 医学系研究科, 講師 (20345630)
KATO Masashi Chubu University, Professor, 生命健康科学研究所, 教授 (10281073)
NAKAMURA Hiroyuki Kochi Medical School, Professor, 医学部, 教授 (30231476)
NOBUKUNI Yoshitaka Kanazawa University, Graduate School of Medical Science, Lecturer, 医学系研究科, 講師 (80295641)

Project Period (FY)

2002 – 2004

Keywords

peoxidase / nitrotyrosine / heart / immunohistochemistry / myocardial infarction / homoglobin / myoglobin / myeloperoxidase

Research Abstract

We investigated whether some enzymes or proteins contribute to peroxidase-dependent tyrosine nitration are existed in the heart and what biochemical characteristics are contained in the peroxidases. Proteins contribute to tyrosine nitration are demonstrated in soluble fractions of rat's heart and showed a maximal tyrosine nitration capacity in pH 6.0 and were determined as hemoglobin and myoglobin. When cryosections of rat's heart were incubated in the presence of low concentrations of N02- and H202,

immunohistochemical localization for nitrotyrosine was observed in a granular pattern in the myocytes. Moreover, we investigated the existence of peroxidase proteins contribute in tyrosine nitration in an ischemic heart or infracted lesions of the heart after isechemia reperfusion. Peroxidase-dependent tyrosine nitration capacity was observed in the coronary artery and determined as myeloperoxidase from neutrophils. However, immunostaining localization for nitrotyrosine was observed in infarcted lesions and not in the coronary artery of fixed heart sections or cryosections of the heart. Therefore, after removal of hemoglobin and myoblobin, although it is speculated that microperoxidases from the decomposition of cytochrome c may contribute to the tyrosine nitration of myocytes, it is not likely to consider it because of molecular weight of contributed proteins. In future, high molecular weight proteins should be investigated.

Research Products (14 results)

All | 2006 | 2005 | 2004 | 2003

All | Journal Article

[Journal Article] Intranasal mite allergen induces allergic asthma-like responses in NC/Nga mice. 2006

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[Journal Article] Reactive nitrogen species formation in eosinophils and imbalance in nitric oxoxide metabolism are involved in atopic dermatitis-like skin lesions in NC/Nga mice. 2005

[Journal Article] Kinobeon A, purified from safflower's culture cells, is a novel and potent single oxygen quencher. 2005

[Journal Article] Reactive nitrogen species formation in eosinophils and imbalance in nitric oxide metabolism are involved in atopic dermatitis-like skin lesions in NC/Nga mice. 2005

[Journal Article] Kinobeon A, purified from safflower's culture cells, is a novel and potent singlet oxygen quencher. 2005

[Journal Article] Induction of myeloperoxidase and nitrotyrosine formation in a human eosinophilic leukemia cell line, Eol-1. 2004

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[Journal Article] Association of single nucleotide polymorphisms in the eosinophil peroxidase gene with Japanese cedar pollinosis. 2004

[Journal Article] Reestimation of Cypridina luciferin analogues (MCLA) as a chemiluminescence probe to detect active oxygen species-cationary note for use of MCLA 2003

[Journal Article] High contribution contrast between the genes of eosinophil peroxidase and IL-4 receptor alpha-chain in Japanese cedar pollinosis. 2003

[Journal Article] Reestimation of Cypridina luciferin analogs (MCLA) as a chemiluminescence probe to detect active oxygen species -cautionary note for use of MCLA. 2003

[Journal Article] High contribution contrast between the genes of eosinophil peroxidase and IL-4 receptor alpha-chain in Japanese cedar pollinosis. 2003

[Journal Article] Formation of superoxide anion during ferrous ion-catalyzed decomposition of linoleic acid hydroperoxide under aerobic condition. 2003

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