

単球走化活性化因子の免疫学的測定法の確立とその臨床的意義の検討

著者	向田 直史
著者別表示	Mukaida Naofumi
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1993 Fiscal Year Final Research Report Summary

Establishment of an immunoassay system for monocyte chemotactic and activating factor (MCAF) and its clinical application

Research Project

Project/Area Number

04671430

Research Category

Grant-in-Aid for General Scientific Research (C)

Allocation Type

Single-year Grants

Research Field

Laboratory medicine

Research Institution

Kanazawa University

Principal Investigator

MUKAIDA Naofumi Department of Pharmacology, cancer Research Institute, Kanazawa University, Associate Professor, がん研究所, 助教授 (30182067)

Co-Investigator(Kenkyū-buntansha)

KAWAI Tadashi Department of Clinical Pathology, Jichi Medical School, Professor, 医学部, 教授 (60048957)

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cytokine / chemokine / enzyme-linked immunosorbent assay / interleukin / monocyte chemotactic and activating factor

Research Abstract

The results of the project is summarized as follows.

1. We established MCAF-producing cell line by transfecting MCAF cDNA into a mouse myeloma cell line and purified MCAF from the culture supernatants of this cell line. We observed that the preadministration of purified recombinant MCAF could prevent either normal or granulocytopenic mice from lethal infection caused by pseudomonas aeruginosa or Salmonella typhimurium.
 2. We established a specific and sensitive ELASA against human MCAF. Using this ELASA, we observed that the pleural fluid levels of MCAF increased in patients with malignant pleurisy upon the administration of an immunomodulator, OK-432. In addition, most human glioblastoma cell lines could produce MCAF in response to IL-1 or TNF α , suggesting a potential role of MCAF in tumor immunity.
 3. We also examined the role of MCAF-related molecule, interleukin-8 (IL-8) in the acute inflammation by administering a neutralizing antibody against IL-8. These experiments demonstrated that IL-8 plays an essential role in neutrophil infiltration and neutrophil-dependent tissue injuries in lipopolysaccharide-induced dermatitis and lung reperfusion injury.
 4. The determination of urinary IL-8 levels using ELISA revealed that urinary IL-8 levels increased in the urines of patients with urinary tract infections and those with several types of glomerulonephritis such as lupus nephritis, acute glomerulonephritis, and IgA nephropathy with acute exacerbations.
- These results imply that the determination of urinary IL-8 level can be used for diagnosing and monitoring several diseases in urinary tracts. In addition, we explored the molecular biological aspects of IL-8 gene activation and established that NF- κ B site was essentially involved in the transcription of IL-8 gene in every cell line that we examined.

Research Products (19 results)

All Other

All Publications (19 results)

- [Publications] Ko, Y.-C., Mukaida, N., Panyutich, A. et al.: "A sensitive enzyme-linked immunosorbent assay for human interleukin 8." *Journal of Immunological Methods*. 149. 227-235 (1992) ▼
- [Publications] Yasumoto, K., Okamoto, S.-i., Mukaida, N., et al.: "Tumor necrosis factor α and interferon γ synergistically induce interleukin 8 production in a human gastric cancer cell line through acting concurrently on AP-1 and NF- κ B like binding sites of the interleukin 8 gene." *Journal of Biological Chemistry*. 267. 22506-22511 (1992) ▼
- [Publications] Ko, Y.-C., Mukaida, N., Ishiyama, S., et al.: "Elevated IL-8 level in the urine of patients with urinary tract infections." *Infection and Immunity*. 61. 1307-1314 (1993) ▼
- [Publications] Sekido, N., Mukaida, N., Harada, A., et al.: "Prevention of lung reperfusion injury in rabbits by a monoclonal antibody against interleukin-8." *Nature*. 365. 654-657 (1993) ▼
- [Publications] Morita, M., Kasahara, T., Mukaida, N., et al.: "Induction and regulation of IL-8 and MCAF production in human brain tumor cell lines and brain tumor tissues." *European Cytokine Network*. 4. 351-358 (1993) ▼
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- [Publications] KO, Y.-C., Mukaida, N., Panyutich, A., voitenok, N.N., Matsushima, K., kawai, T., and kasahara, T.: "A sensitive enzyme-linked immunosorbent assay for human interleukin-8" *Journal of Immunological Methods*. 149. 227-235 (1992) ▼
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- [Publications] harada, A., Sekida, N., Kuno, K., Akiyama, M., Kasahara, T., nakanishi, I., Mukaida, N., and Matsushima, K.: "Expression of recombinant rabbit IL-8 in Escherichia coli and establishment of the essential involvement of IL-8 in recruiting neutrophils into lipopolysaccharide-induced inflammatory site of rabbit skin." International Immunology. 5. 681-690 (1993) ▼
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