

Author: Keyword: [ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1880-313X

PRINT ISSN : 0388-6107

Biomedical Research

Vol. 27 (2006) , No. 3 June pp.117-124

[\[PDF \(487K\)\]](#) [\[References\]](#)**Nitric oxide synthase activity in rat gastric mucosa contributes to mucin synthesis elicited by calcitonin gene-related peptide**Takafumi ICHIKAWA¹⁾, Tatsumi KUSAKABE²⁾, Yukari GONO³⁾, Nobuaki SHIKAMA³⁾, Hiromi HIRUMA⁴⁾, Tadashi KAWAKAMI⁴⁾ and Kazuhiko ISHIHARA⁵⁾

- 1) Departments of Biochemistry, Kitasato University School of Medicine
- 2) Departments of Sport and Medical Science, Kokushikan University
- 3) Departments of Internal Medicine, Kitasato University School of Medicine
- 4) Departments of Physiology, Kitasato University School of Medicine
- 5) Departments of Biochemistry, Kitasato University School of Allied Health Sciences

(Received March 13, 2006)

(Accepted April 5, 2006)

ABSTRACT

The majority of research for the calcitonin gene-related peptide (CGRP) in the stomach has been devoted to the submucosal blood flow, and only slight attention has been paid to its involvement in the gastric epithelial function. In this study, we examined the age-related change in the CGRP-containing nerves and its effects on the mucin metabolism. We compared the immunoreactivity for CGRP in the gastric mucosa of 7-week-old rats (young) to that of 52-week-old animals (middle-aged). The effects of CGRP on the mucin biosynthesis were compared using the stomachs from both young and middle-aged rats. The nitric oxide synthase (NOS) activity was measured in the surface and deep mucosa of the gastric corpus. The density of the CGRP nerve fibers was reduced in both the lamina propria and submucosa of the middle-aged rats compared to the young rats. CGRP stimulated the mucin biosynthesis in the cultured corpus mucosa from the 7-week-old rats, but not from the 52-week-old rats. The total NOS activity of the surface layer in the corpus mucosa was markedly reduced in the middle-aged rats compared to the young rats. These findings demonstrate the age-dependent reduction in the CGRP-induced mucin biosynthesis, as well as in the density of the CGRP fibers in the rat stomach. The decreased NOS activity in the surface layer of the oxyntic mucosa in the aged rats may also be a principal cause for the lack of regulation of the mucin biosynthesis by CGRP.

To cite this article:

Takafumi ICHIKAWA, Tatsumi KUSAKABE, Yukari GONO, Nobuaki SHIKAMA, Hiromi HIRUMA, Tadashi KAWAKAMI and Kazuhiko ISHIHARA; "Nitric oxide synthase activity in rat gastric mucosa contributes to mucin synthesis elicited by calcitonin gene-related peptide", *Biomedical Research*, Vol. **27**, pp.117-124 (2006) .

doi:10.2220/biomedres.27.117

JOI JST.JSTAGE/biomedres/27.117

Copyright (c) 2006 Biomedical Research Press



[Japan Science and Technology Information Aggregator, Electronic](#)

