

# 食品生理学研究室ニュース1

New of Laboratory of Food and Physiological Sciences:

Vol 1. 2-DEC-2015

★当研究室の食品生命科学科4年竹鼻志織さんの研究成果が  
“Brain Research Bulletin120(2016)117-122”

に掲載されました!!!

論文内容は”オープンアクセスジャーナル形式”で掲載されており  
Pub Medよりフリーでダウンロードできます。

Brain Research Bulletin 120 (2016) 117–122



Contents lists available at ScienceDirect

Brain Research Bulletin

journal homepage: [www.elsevier.com/locate/brainresbull](http://www.elsevier.com/locate/brainresbull)



Research report

Systemic administration of resveratrol suppress the nociceptive neuronal activity of spinal trigeminal nucleus caudalis in rats



Shiori Takehana<sup>a</sup>, Kenta Sekiguchi<sup>a</sup>, Maki Inoue<sup>b</sup>, Yoshiko Kubota<sup>c</sup>, Yukihiro Ito<sup>c</sup>,  
Kei Yui<sup>c</sup>, Yoshihito Shimazu<sup>a</sup>, Mamoru Takeda<sup>a,\*</sup>

<sup>a</sup> Laboratory of Food and Physiological Sciences, Department of Life and Food Sciences, School of Life and Environmental Sciences, Azabu University, 1-17-71, Fuchinobe, Chuo-ku, Sagami-hara, Kanagawa 252-5201, Japan

<sup>b</sup> Laboratory of Physiology II, Department of Veterinary Science, School of Veterinary Medicine, Azabu University, 1-17-71, Fuchinobe, Chuo-ku, Sagami-hara, Kanagawa 252-5201, Japan

<sup>c</sup> Fancl Health Science Research Center, Research Institute, FANCL Corporation, 12-13, Kamishinano, Totsuka-ku, Yokohama, Kanagawa 244-0806, Japan

## ARTICLE INFO

### Article history:

Received 5 October 2015

Received in revised form

12 November 2015

Accepted 16 November 2015

### Keywords:

Nociception

Polyphenol

Resveratrol

Spinal trigeminal nucleus caudalis

Single unit recording

Alternative medicine

## ABSTRACT

Although a modulatory role has been reported for the red wine polyphenol resveratrol on several types of ion channels and excitatory synaptic transmission in the nervous system, the acute effects of resveratrol *in vivo*, particularly on nociceptive transmission of the trigeminal system, remain to be determined. The aim of the present study was to investigate whether acute intravenous resveratrol administration to rats attenuates the excitability of wide dynamic range (WDR) spinal trigeminal nucleus caudalis (SpVc) neurons in response to nociceptive and non-nociceptive mechanical stimulation *in vivo*. Extracellular single unit recordings were made from 18 SpVc neurons in response to orofacial mechanical stimulation of pentobarbital-anesthetized rats. Responses to both non-noxious and noxious mechanical stimuli were analyzed in the present study. The mean firing frequency of SpVc WDR neurons in response to both non-noxious and noxious mechanical stimuli was inhibited by resveratrol (0.5–2 mg/kg, *i.v.*) and maximum inhibition of the discharge frequency of both non-noxious and noxious mechanical stimuli was seen within 10 min. These inhibitory effects were reversed after approximately 20 min. The relative magnitude of inhibition by resveratrol of SpVc WDR neuronal discharge frequency was significantly greater for noxious than non-noxious stimulation. These results suggest that, in the absence of inflammatory or neuropathic pain, acute intravenous resveratrol administration suppresses trigeminal sensory transmission, including nociception, and so resveratrol may be used as a complementary and alternative medicine therapeutic agent for the treatment of trigeminal nociceptive pain, including hyperalgesia.

© 2015 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**ハイライト:** 赤ワインの成分で知られるレスベラトロールは長寿遺伝子の活性化などの有名な生理作用の他に中枢神経系の興奮伝達などに関わるシナプス伝達やイオンチャネルの機能を調節することが知られていた。今回、著者らは関連痛などの疼痛伝達に重要な役割を果たす広作動域ニューロンの興奮がレスベラトロールの静脈内投与により濃度依存性・可逆的に抑制されることを明らかにした。本研究の成果は、レスベラトロールが臨床の場において新たな副作用のない鎮痛薬となる可能性と代替医療に貢献することを示唆している!