食品生理学研究室ニュース15

News of Laboratory of Food and Physiological Sciences:
Vol.15. 2-DEC-2019

★平成28年度卒業生「小林歩夢君・遠藤汐梨さん」令和元年度４年次在学生「竹村仁君」の研究成果が口腔科学の専門誌“Eur J Oral Sci”に掲載されました!!!

European Journal of Oral Sciences 127 (2019) 379-385

Effect of lutein on the acute inflammation-induced c-Fos expression of rat trigeminal spinal nucleus caudalis and C1 dorsal horn neurons

Shimazu Y *, Kobayashi A, Endo S, Takemura J, Takeda M

Abstract

Although lutein is known to inhibit chronic inflammation, its effect on acute inflammation-induced nociceptive processing in the trigeminal system remains to be determined. The aim of the present study was to investigate whether pretreatment withlutein attenuates acute inflammation-induced sensitization of nociceptive processing in rat spinal trigeminal nucleus caudalis (SpVc) and upper cervical (C1) dorsal horn neurons, via c-Fos immunoreactivity. Mustard oil, a transient receptor potential ankyrin-1 channel agonist, was injected into the whisker pads to induce inflammation. Pretreatment of rats with lutein resulted in significant decreases in the inflammation-induced mean times of face grooming and the thickness of inflammation-induced edema in whisker pads relative to those features in inflamed rats (i.e., rats with no lutein pretreatment). In both the ipsilateral superficial and deep laminae of the SpVc and C1 dorsal horn, there were significantly larger numbers of c-Fos-positive neurons in inflamed rats than in naive rats, and lutein pretreatment significantly decreased that number relative to inflamed rats. These results suggest that systemic administration of lutein attenuates acute inflammation-induced nocifensive behavior and augmented nociceptive processing of SpVc and C1 neurons that send stimulus localization and intensity information to higher pain centers. These findings support lutein as a potential therapeutic agent for use as an alternative, complementary medicine to attenuate, or even prevent, acute inflammatory pain.

ハイライト：これまでの本研究室の研究成果よりブロッコリーやホウレンソウに含まれる食品成分：ルテインが慢性炎症により生じる痛覚過敏を抑制することが判明している（Syoji et al., 2018)。今回、著者らは行動学的手法とc-Fos免疫組織化学法を用いて、ルテインが急性炎症に付随する自発痛と中枢神経系において疼痛伝達に関わるニューロンの活動を広範囲に抑制することを明らかとした。ルテインが急性炎症とこれに付随する自発痛の疼痛緩和に役立つことが明らかとなり、補完代替医療への知見が新たに加えられた。