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★令和5年度（2023年） 卒業生 「指出幸人君」の研究成果が、国際的疼痛学専門誌”Journal of Pain“に掲載されました!!!

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Local Administration of the Phytochemical, Quercetin, Attenuates the Hyperexcitability of Rat Nociceptive Primary Sensory Neurons Following Inflammation Comparable to lidocaine

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Abstract: Although in vivo local injection of quercetin into the peripheral receptive field suppresses the excitability of rat nociceptive trigeminal ganglion (TG) neurons, under inflammatory conditions, the acute effects of quercetin in vivo, particularly on nociceptive TG neurons, remain to be determined. The aim of this study was to examine whether acute local administration of quercetin into inflamed tissue attenuates the excitability of nociceptive TG neurons in response to mechanical stimulation. The mechanical escape threshold was significantly lower in complete Freund's adjuvant (CFA)-inflamed rats compared to before CFA injection. Extracellular single-unit recordings were made from TG neurons of CFA-induced inflammation in anesthetized rats in response to orofacial mechanical stimulation. The mean firing frequency of TG neurons in response to both non-noxious and noxious mechanical stimuli was reversibly inhibited by quercetin in a dose-dependent manner (1–10 mM). The mean firing frequency of inflamed TG neurons in response to mechanical stimuli was reversibly inhibited by the local anesthetic, 1% lidocaine (37 mM). The mean magnitude of inhibition on TG neuronal discharge frequency with 1 mM quercetin was significantly greater than that of 1% lidocaine. These results suggest that local injection of quercetin into inflamed tissue suppresses the excitability of nociceptive primary sensory TG neurons.

Perspective: *Local administration of the phytochemical, quercetin, into inflamed tissues is a more potent local analgesic than voltage-gated sodium channel blockers as it inhibits the generation of both generator potentials and action potentials in nociceptive primary nerve terminals. As such, it contributes to the area of complementary and alternative medicines.*

ハイライト： これまでに既存の局所麻酔薬は炎症部位には奏功しにくいことが知られており、臨床上の問題点として指摘されておりました。今回リンゴやタマネギに含まれるファイトケミカルである「ケルセチン」がラットの炎症組織への局所投与により侵害受容性一次ニューロンの興奮性を1%リドカインよりも強い抑制効果を持つことを発見致しました。この発見はケルセチンが、医療の場で使用される既存の局所麻酔薬の欠点を補う副作用のない代替薬となり、臨床医療の現場における補完代替医療に貢献する可能性を強く示唆しております。