

研究者：Luo Gang (所属：福岡歯科大学小児歯科)

研究題目：The effect of CO₂ laser on promoting wound healing of ulcer in mice oral mucosa

目的：

Recently, the carbon dioxide (CO₂) laser has been reported to help wound healing, and become a useful tool for treatment of ulceration or stomatitis. However, the healing mechanisms by CO₂ laser have not been completely understood. The aim of this study is to confirm the effect of CO₂ laser treatment for wound healing using ulcer model mice.

対象および方法：

In order to create ulcer model, C57BL6 mice at 8 weeks were used. Each group was consisted of four mice. To create the ulcer, a swab with 50% acetic acid was put on the mice palatal mucosa for one minute under general anesthesia. Next day, Low- (1.0w, pulsefrequency1ms) or High-CO₂ laser (3.0w, pulse frequency 2ms) were irradiated on the wound lesion for 10s under general anesthesia. HE staining and immunohistochemical expression of Ki67 and Tenascin C (TnC) were performed.

結果および考察：

In CO₂ laser group, the epithelium recovery of wound area evaluated by HE expression was faster than that in control group (Fig. 1). In cell proliferation assay with Ki67 staining, we calculated the Ki67 positive cell among all the cells we can see in basal layer of epithelium. We chose two areas, one is the wound margin area and the other is renewed epithelium area, which is believed to have a lot of new cells formed to repair the wound (Fig. 2). Ki67 activity of newly formed epithelium at the border of wound in high-CO₂ laser group was higher than that in control group (Fig. 3). TnC expression associated with inflammation emerged in the lamina propria after making ulcer, it was continuously observed even after renewed epithelium covered the wound. TnC expression in high-CO₂ group was increased than that in control group (Fig. 4).

CO₂ laser treatment accelerated the wound healing through inducing cell proliferation of renewing epithelium. TnC expression in lamina propria was induced by CO₂ laser treatment ; it may be related with the proliferation of renewing epithelium.

COI : The authors have declared that no COI exists.

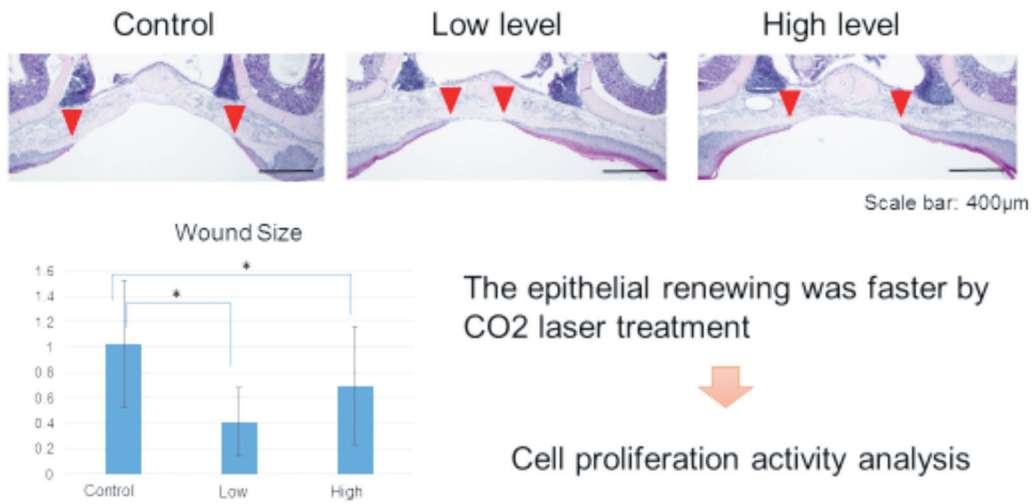


Fig. 1 HE staining of day 3

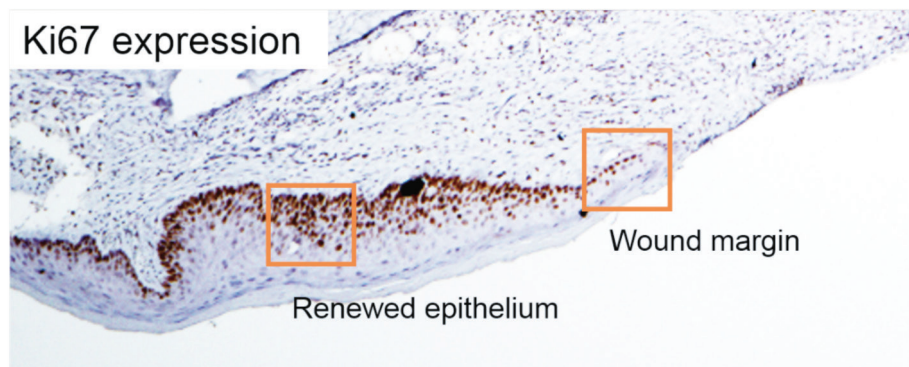


Fig. 2 Cell proliferation activity analysis

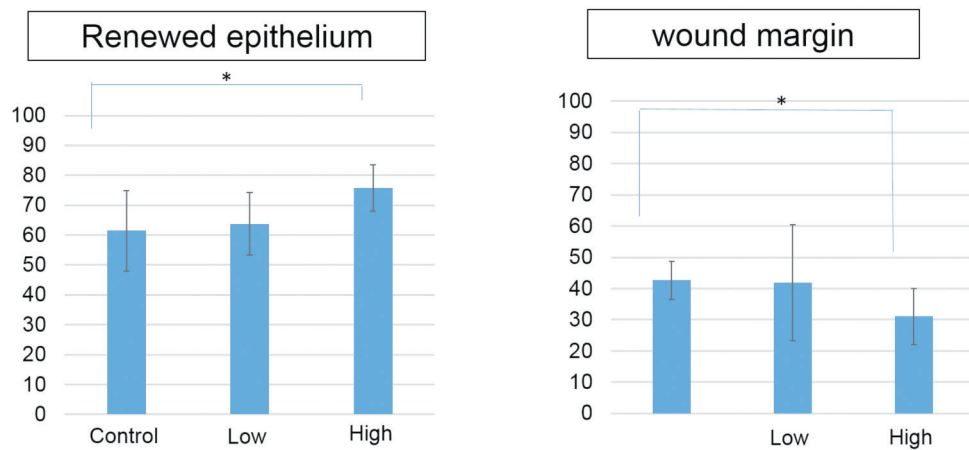


Fig. 3 Cell proliferation activity analysis of day 3

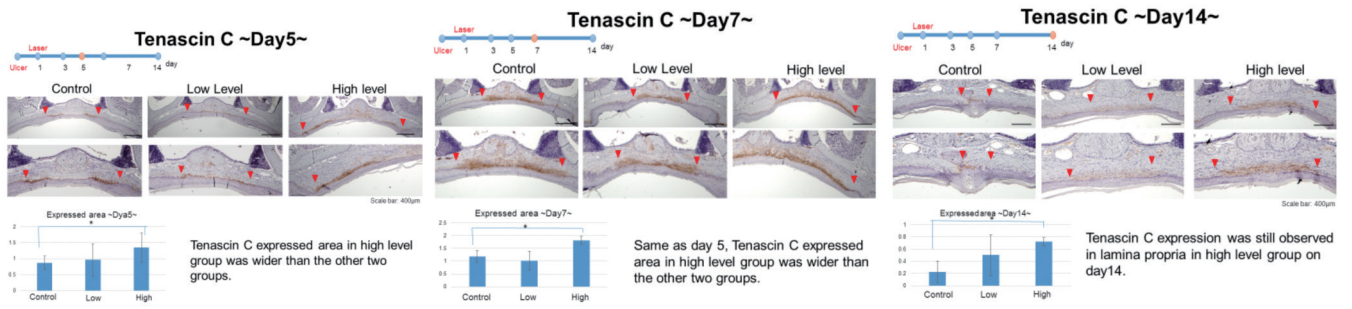


Fig. 4 Tenascin C expression during wound healing

成果発表：

2016年5月に東京で開催されるアジア小児歯科学会にて成果発表予定。

2016年10月福岡で開催される歯科医学会総会にて成果発表予定。