Cosmetic & Pharmaceutical Research > Cosmetic & Pharmaceutical Research > Laser Treatment

7 | Skin healing and collagen changes of rats after fractional erbium:yttrium aluminum garnet laser: observation by reflectance confocal microscopy with confirmed histological evidence.

Yang J, Wang S, Dong L, An X, Li Y, Li J, Tu Y, Tao J. Lasers Med Sci. 2016 Jun 8.

ABSTRACT

The fractional erbium:yttrium aluminum garnet (Er:YAG) laser is widely applied. Microstructural changes after laser treatment have been observed with histopathology. Epidermal and dermal microstructures have also been analyzed using reflectance confocal microscopy (RCM). However, no studies have compared these two types of microstructural changes in the same subject at multiple time points after irradiation, and it is unclear if these two types of changes are consistent. We use RCM to observe the effect of different laser energies on skin healing and collagen changes in the skin of Sprague-Dawley rats that had been irradiated by fractional Er:YAG lasering at different energies. RCM was used to observe skin healing and detect collagen changes at different time points. Collagen changes were observed using hematoxylin and eosin (H&E) staining and quantitatively analyzed by western blot. RCM showed that, irrespective of laser energy, microscopic treatment zones (MTZs) were larger at 1 day after irradiation. The MTZs then reduced in size from 3 to 7 days after irradiation. The higher the energy, the larger the MTZ area. The amount of collagen also increased with time from 1 day to 8 weeks. However, the increase in the collagen amount on both RCM and H&E staining was not influenced by the laser energy. Western blotting confirmed that the amount of type I and type III collagens increased over time, but there were no significant differences between the different energy groups (p?>?0.05). In conclusion, RCM is a reliable technique for observing and evaluating skin healing and collagen expression after laser irradiation. KEYWORDS: Collagen change; Er:YAG; RCM; Skin healing PMID:27272747