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**Format:** Abstract

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## Effects of laser-assisted fluoride therapy with a CO2 laser and Er, Cr:YSGG laser on enamel demineralization.

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### Author information

### Abstract

**PURPOSE:** The purpose of this in vitro study was to evaluate the irradiation efficacy of the CO(2) laser and the Er, Cr:YSGG laser-either unassisted or assisted by acidulated phosphate fluoride (APF) treatment-on enamel's acid resistance.

**METHODS:** One hundred twenty enamel samples, obtained from 20 extracted human molars, were randomly assigned to 6 groups as follows: (1) control (C); (2) exposed to acidulated phosphate fluoride (APF) gel (F); (3) Er, Cr:YSGG laser (EL); (4) irradiated with Er, Cr:YSGG laser through APF gel (EL/F); (5) CO(2) laser (CL); and (6) irradiated with CO(2) laser through APF gel (CL/F). The specimens were individually demineralized in an acidified hydroxyethylcellulose system, and the acid resistance was evaluated by determining the calcium ion using atomic absorption spectrometry.

**RESULTS:** The average concentration of the calcium ion determined in groups C, F, EL, EL/F, CL, and CL/F was, respectively, 3.36, 2.63, 2.26, 2.32, 2.24, and 1.51 ppm. The results showed that demineralization in the: CL/F group was significantly less than the other groups; and the control group was significantly more than the other groups ( $P < .001$ ).

**CONCLUSION:** The effect of CO(2) laser irradiation, used with acidulated phosphate fluoride, in

decreasing the enamel demineralization was more than all the other groups.

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**MeSH terms, Substances**

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