EFFECTS OF TOOTH WHITENING BY A COLD ATMOSPHERIC NITROGEN PLASMA

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This study is to verify effects of tooth whitening by a direct-current cold atmospheric nitrogen plasma as a light source for tooth whitening. Cold plasma was examined in 35% HP, 5% HP and distilled water, respectively for 20 minutes whereas control group is conducted to examine tooth whitening effect of 35% HP without cold plasma. The result of research showed that color change CIE(L*,a*,b*) are increased as time takes longer in 5 min, 10 min, 15 min and 20 min respectively and statistically it showed significant differences (p<0.01). After 20 min, A group which experiments plasma applied with 35% HP and B group that experiments plasma applied with 5% showed high changes of colors. For the result of comparing surface roughness, significant differences was indicated statistically in each group (p<0.01). A group showed highest surface roughness, followed by D group which was conducted with 35 HP solely. When compared tooth whitening effect before and after experiments by using scanning electron microscope(SEM), the group A showed highest surface roughness, followed by the group D which was conducted tooth whitening with 35 HP solely.

To sum up from the above results, it can be considered that only 5% hydrogen peroxide can make tooth whitening effects when cold plasma is used, and changes of surface can be minimized. It is expected that further research might be required to investigate cold plasma as light source for tooth whitening effect.