

**Effect of In-Dental clinic Bleaching Agents
on The Releases of Mercury from Dental
Amalgam and on The Mineral Ions Loss
from The Enamel Surfaces in Relation to
Their Times Intervals.**

(In-vitro study)

A thesis

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Abstract

During the past years many researches recognized the many side effects of the bleaching immediately after the vital tooth bleaching procedure or after periods of times. Many attempts measure the effect on the enamel surface and dental restoration using different methods.

The purpose of this in vitro study was conducted to evaluation the effect of two different bleaching agents; in-office (35% carbamide peroxide) and (35% hydrogen peroxide) bleaching agents and effect of two activation different light sources; laser radiation (Nd: YAG light) and light cure (Halogen light) on the release of mercury from specimen dental amalgam, from class I amalgam restoration and on the mineral ions loss from sound enamel surface and comparison of the bleaching methods between the three times intervals, 35% H.P and 35% C.P (48 hours, 72 hours and 96 hours).

The sample consists of 172 sound human 1st premolar tooth and 54 specimen of amalgam and 54 class I preparation were divided into two major groups: the first group (A) for measure release of mercury from dental amalgam, consist of 54 specimen of amalgam and 54 teeth preparation with class I amalgam restoration. The second group (B) consist of 96 sound enamel surface (54 for calcium ions and 54 for po4 ions) for measure the ions release from surface of enamel.

First group(A) where sub-divided into:

Group A1:

1. Control group (12) : 6 samples class I amalgam restoration and 6 specimen of dental amalgam where not treated with bleaching.
2. Bleaching groups:
 1. (24) sample with class I amalgam restoration treated 35% H.P with used of two light source and at different period of time .

2. (24) specimen of amalgam treated 35% H.P with used of two light source (laser and light cure), and at different period of time (48 hours, 72 hours and 96 hours).

Group A2:

Bleaching groups:

1. (24) sample with class I amalgam restoration treated 35% C.P at different period
2. (24) specimen of amalgam treated 35% C.P with used of two light source.

Second group(B) where sub-divided into: Group B1:

1. Control group (12) : 6 samples of sound enamel surface not treated with bleaching agents for calcium ions and 6 samples for phosphate ions.
2. Bleaching groups:
 1. (24) sample of enamel surface treated 35% H.P for measure the calcium ions.
 2. (24) sample of enamel surface treated 35% H.P for measure the phosphate ions.

Group B2: Bleaching groups:

1. (24) sample of enamel surface treated 35% C.P for measure the calcium ions.
2. (24) of sound enamel surface treated 35% C.P for measure the phosphate ions.

All the groups storage in glass container contain 10ml of de-ionized distilled water and kept incubator at 37°C for period of time , until the period of testing. Then measure release of mercury by Flameless atomic absorption spectrophotometer and Gold Vapor Generator. While measure loss of ions from enamel surface by Buck scientific atomic absorption spectrophotometer and Spectrophotometer.

Results showed that all groups exposed to bleaching agent show release of mercury from dental amalgam, but the higher release of mercury after (96hours) of times and show a highly significant increase in the release of mercury values from the specimen of amalgam compared from class I amalgam restoration with increase storage times and more increase when use of laser radation than the halogen light and more release with carbamide peroxide than the hydrogen peroxide.

While for second part of study on sound enamel surface showed the result a highly significant increase in the release of ions over the times, but showed that a higher release for calcium ions than the phosphate ions after tested and more increase when use of laser radation than the halogen light to activate the bleaching and more release when used 35% carbamide peroxide.