

Ministry of Higher Education  
& Scientific Research  
University of Baghdad  
College of Dentistry



**COLOR STABILITY OF TREATED  
WHITE SPOT LESION WITH SOME  
REMENIRALAZATION AND RESIN  
INFILTRATION MATERIALS  
(FLUORIDE VARNISH, TOOTH MOUSSE, ICON)  
In Vitro study**

A thesis

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# Abstract

The White spot lesions represent subsurface enamel demineralization, formed as a result of plaque accumulation around orthodontic appliance and affect the color and esthetic of enamel the aim of this study was to evaluate the colour changed and lesion depth of WSLs and their stability against discolouration following, fluoride, Casein phosphor-peptides-amorphous calcium phosphate (CPP-ACP), Tooth Mousse and resin infiltration treatments in vitro study.

Artificial White spot lesions were created on human enamel at the gingival third of buccal surface of premolar tooth (N = 120) using carboxymethylcellulose sodium salt and 0.1 M lactic acid at pH (4 - 4.5) at room temperature in closed container to prevent dehydration for 4 week where the solution changed every (48 hours) to keep the pH constant, and then samples were randomly allocated to four groups. Three groups were treated with fluoride varnish, tooth mousse and resin infiltration and the fourth untreated group White spot lesion group. Groups were discolored in Cola and orange juice for 24 hours. Colour change ( $\Delta E$ ) of each specimen was measured with portable spectrophotometer (VITA Easy shade) then lesion depth ( $\mu m$ ) was measured by Stereo Microscope after ground sectioning of tooth, both color change and lesion depth were measured at baseline after WSL formation, after treatment, and after discolouration (24 hours).

WSL formation increased color change ( $\Delta E$ ) and increase lesion depth ( $\mu m$ ) mean values in all groups. Highest  $\Delta E$  and lesion depth improvement was obtained by fluoride varnish then tooth mousse followed by resin infiltration with significant difference between treatment groups after discolouration with Cola and orange juice except between untreated WSLs and ICON group in deionized distal water and between tooth mousse and ICON groups in Cola where a non-significant difference

was found ( $P=0.3$ ,  $P=0.2$ ) respectively. Within the same treatment group, discolouration solutions had differ significantly and the Cola drink had higher discoloring effect in all treatment groups except the untreated WSLs group was found the same discoloring effect of Cola and orange juice( $P=0.3$ ).

Remineralization of WSLs with fluoride varnish and tooth mousse could treat the white opaque appearance and lesion depth, this outcome was relatively stable under discoloring effects. Also resin infiltration was found to treat the amount of WSLs depth and opacity color improvement; however, the long-term color stability showed significant decrease against soft drinks (Cola, orange juice) relative to fluoride varnish and tooth mousse .