

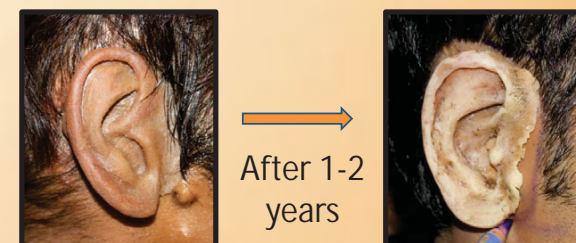
EFFECT OF UV STABILIZERS ON COLOR STABILITY OF MAXILLOFACIAL SILICONE ELASTOMERS

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STATEMENT OF PURPOSE

The most common problem associated with the use of maxillofacial prostheses are the degradation of their color and physical properties over time. These changes are mainly attributed to their exposure to Ultra-violet radiation, humidity, cleansing agents, body fluids, adhesives and sometimes, cosmetics. Silicone prostheses therefore need to be re-made periodically. It is, therefore important to enhance the life of silicone prostheses by preventing/minimising their degradation. This can be achieved by stabilization of the elastomers.



OBJECTIVE

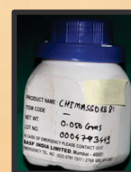
Color change in a silicone mix can be due to degradation **Of the pigments**
Of the silicone elastomer itself

To study the effect of a UV stabilizers (UV absorbers and Hindered amine light stabilizers) on the color change of silicone elastomer subjected to weathering .

MATERIALS AND METHODOLOGY

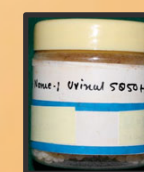


Silicone: Z004 1: 1 platinum based system (Technovent Ltd. ,UK)



UV stabilizer 1-
Chimassorb 81
(BASF,India)

UV stabilizer 2-
Uvinol 5050
(BASF,India)

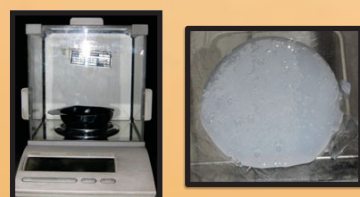


Color testing: Spectrophotometer:-Vita shade 3D master (Vident) using the CieLab system measuring the L,a,b values

Weathering: Environmental chamber and UV chamber



3 piece mold



Silicone and UV stabilizers were measured using a digital scale



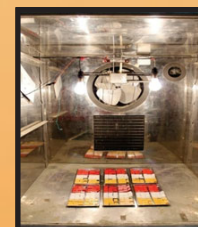
The material was manipulated and packed in the mold

The samples were heat cured at 80 degrees Celsius for 45 mins

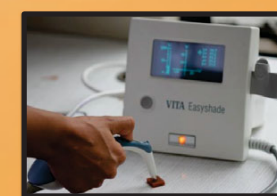
The surfaces of the samples were cleaned with acetone to remove any unwanted particles and the color was measured again



Weathering in a UV chamber for 18 hours

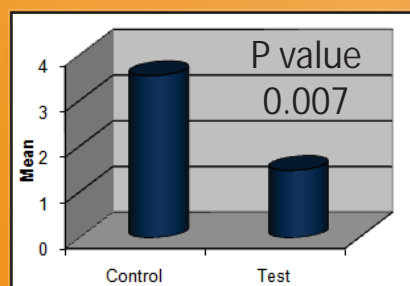


Weathering in an Environmental chamber for 72 hours

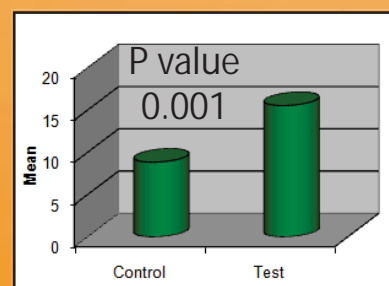


Samples were measured(L,a,b values) using a spectrophotometer

RESULTS AND CONCLUSION

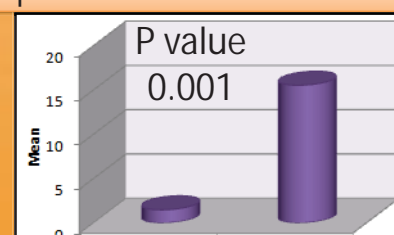


UV stabilizer 1



UV stabilizer 2

Comparison between the 2 Stabilizers



UV 1

UV 2

UV stabilizer 1 showed significantly lesser color change than UV stabilizer 2

Statistical analysis by Unpaired t test