



Cytotoxic Evaluation of a Colored Maxillofacial Silicone Elastomer

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One of the issues in the prosthetic rehabilitation of a maxillofacial defect is, to help the patient regain the normal facial appearance, to protect the region that has undergone surgical operation, to help raise self-confidence and to return to normal life in the best possible way. Therefore, the prosthetic rehabilitation should have the optimum aesthetic and functional properties and maintain them throughout its service time. Beside the defect and the incapacity of the materials used, an extra oral prosthesis can still be judged as good or bad mostly due to the harmony of its color with the surrounding tissue. Therefore, a maxillofacial prosthesis' material must accept and retain the coloration in the best way to achieve success. There are many materials and techniques used in the coloring of facial prosthesis, and scientific studies regarding their harmony with the adjoining tissues.

The biocompatibility of a material is essential due to its interaction with the oral tissues and can be explained as the biologic response without causing any toxic or injurious effects in the cellular level. Cell culture studies are frequently used to assess the cytotoxicity of dental and medical materials. There was inverse correlation between cell viability and cytotoxicity. Cell viability is considered to be higher its mean the cytotoxicity is considered be lower. Recently, a number of techniques related with in vitro evaluation of cytotoxicity have been

established. Colorimetric evaluation of soluble formazon dye (MTT assay) for measuring cellular proliferation has been frequently used in investigations based on cytotoxicity due to its being easy, repeatable and cost-effective properties. Yellow MTT (3-(4,5-dimethyl-thiazoyl)-2,5-diphenyltetrazolium bromide) is reduced to purple formazon in the mitochondria of living cells which indicates that mitochondrial enzymes are active. Accelerated aging is a testing method used to estimate the useful lifespan of a product and to simulate the long-term effects of environmental factors, which a material is subjected to. The procedure evaluates the response of a material under normal usage conditions in the long term. The material is subjected to heavier or frequently applied environmental factors with higher levels of stress for a shorter period to mimic the effects of normal use. This accelerated process consists of different ultraviolet light levels, temperature and humidity changes. Especially in cell culture studies, specimens are generally exposed to artificial aging in different solutions to mimic the effects of normal use.

Several investigations have been introduced for the evaluation of the cytotoxicity of silicone elastomer. In clinical applications maxillofacial silicones colored with various coloring agents appropriate patient's skin color.

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