

Three - dimensional color coordinates of natural teeth in a sample of young Saudis: A pilot study

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هدفت هذه الدراسة إلى تحديد الأبعاد الثلاثية لعوامل اللون الخاصة بأسنان عينة من سعوديين يافعين. شارك في هذه الدراسة ١٠٠ طالب وطالبة من كلية طب الأسنان، جامعة الملك سعود. ولقد تم إختيار احد القواطع العلوية السليمة من كل طالب او طالبة لقياس عوامل اللون في الجزء الأوسط منها. تم قياس كل سن بواسطة السيكتروفوتوميتر (أداة قياس شدة الضوء بين مختلف أجزاء الطيف)، و تحديد عوامل اللون في نظام (CIELAB) ومن ثم تمت مقارنة عوامل اللون (*L*, a*, b) الخاصة بالطالب بتلك الخاصة بالطالبات. اظهرت النتائج انه لم يكن هناك فوارق في درجة سطوع اللون بين أسنان الطلبة والطالبات. إلا أن أسنان الطالبات كان اللون فيها أقل تشبيها مقارنة بأسنان الطلبة.

The objective of this *in vivo* study was to determine the three dimensional color coordinates of teeth in a sample of young Saudi subjects. One hundred male and female Saudi dental students in the College of Dentistry at King Saud University participated in this study. For each subject, the color measurements were performed for the middle third of one maxillary central incisor. The VITA Easyshade spectrophotometer was used to determine the CIELAB color coordinates (L*, a*, b*). The L*, a*, b* values of male and female subjects were compared. Results showed that there was no statistically significant difference in lightness (L*) of the male and female teeth. On the other hand, female teeth appeared to be less saturated (less a* and b*).

INTRODUCTION

Harmonious color matching of a restoration or prosthesis to the remaining dentition, particularly in the anterior region, is of primary concern to dental patients.¹ Accurate determination of the natural teeth color range is essential to the manufacturing of tooth color restorative materials and shade guides that match different natural dental shades.

Traditionally, the dental profession has described the color of teeth in terms of Munsell color parameters namely: hue, value and chroma. However, in order to be able to facilitate the quantification of color differences, the L* a* b* color system was developed by the Commission Internationale de l'Eclairage (CIE) which is the International Commission on Illumination. The three parameters (coordinates) to define color are L*, a* and b*. The L* coordinate correlates to Munsell value which described the level of

grayness of a color along the black - white axis. The a* coordinate describes the color in reference to the red - green axis and the b* coordinate relates to the yellow - blue axis. Therefore, the a* and b* coordinates describe the chromatic component of the color.²⁴

The ranges of natural teeth color have been reported by various investigators.⁵⁸ The data of these studies were obtained from both *in vitro* and *in vivo* measurements. These studies demonstrated the disharmony between the colors of available dental porcelain and dental shade guides on one hand, and the color ranges of natural teeth on the other.²⁻⁸⁹ At the present time, there appears to be no published data about the ranges of natural teeth color of the Saudi population.

The objective of this study was to provide baseline information regarding the distribution of natural teeth of young Saudi male and female subjects, in the color space, using the CIE L* a* b* color system.

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