AGE RELATED TOOTH COLOR CHANGES ACCORDING TO CIE Lab COLOR SCALE

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Introduction

Aging is a normal biological process in which the human body is changing irreversibly. Oral tissues also are not spared from that process. In general, tooth color is a very important reason for better self-confidence at any age.

Aim

The purpose of this study was to determinate how aging affects tooth color, and to show how is tooth color changing in different age groups.

Methodology and material

We evaluated 235 maxillary central incisors, with spectrophotometer ShadePilotTM (Degu Dent, Germany), both male and female, within an age range of 18 to 69 years. We used specific inclusive and exclusive criteria. The tooth color was analyzed in CIA Lab color scale. All patients were divided into three age groups. In the first group the patients were 18-30 years old, the second 31-49 years and the third 50-69 years old. Color differences in the parameters L (Lightness) and a* and b* between groups were analysed with ANOVA/MANOVA Factorial Anova and Post-hoc tests.

INCLUSIVE CRITERIA
- Patients over 18 years old
- Natural upper permanent central incisor (left or right)
- Minimal or medium inclination of the teeth in horizontal and vertical plane, minimal incisal edge abrasion as well as small angle cracks were allowed.
- Small areas of discoloration were accepted

EXCLUSION CRITERIA
- Caries lesions
- Teeth with any king of restorations
- Endodontically treated teeth
- Big discolorations like fluorosis, tetracyclines discolorations etc.
- Hypoplasia, dentinogenesis imperfecta
- Very inclined or rotated teeth
- Whitened teeth
- Teeth with high grades erosions and abrasion

Results

There is a statistical difference in the L* values between the three age groups (F=110,73 and p<0,001(p=0,000)). The oldest age group has the lower values of L*, followed by the second and the first age group. The value of L* is decreasing with aging. (graphs 1) According to the a* red/green coordinate there is also a significant difference in the values between the patient of different ages(F=31,56 p<0,001(p=0,000)). The value of a* is increasing with age. (graphs2)The value of the yellow/blue coordinate b* is statistically very different in the three age groups (F=15,65 и p<0,001(p=0,000)). Young patients have lower values of b*. (graphs 3.)
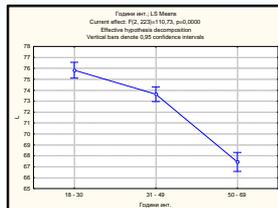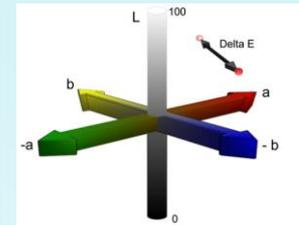

Graph 1. L*difference between age groups
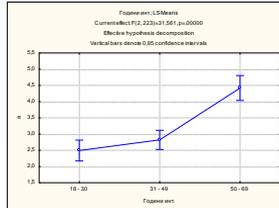
Graph 2.Difference in value a*
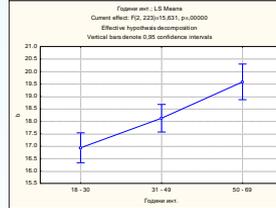
Graph 3.Difference in value b*

Conclusion

With aging the teeth are getting darker with less luster. The patients from the youngest age group 18-30 years old have bright and white teeth of all. Tooth color is changing as we are getting old making the teeth yellower and redder. The normal natural changes like abrasion and enamel thinning, also secondary dentin accumulation and pulp chamber lowering can make the teeth look dull, with dark yellowish-redder shades. These changes are the most noticeable in the oldest age group. We can conclude that aging has great impact on tooth color.