INTRODUCTION
The treatment of tooth discoloration is a topical issue in modern aesthetic dentistry. One of non-invasive methods is the whitening of teeth. However, in addition to the positive effects this procedure is accompanied with the changes of mineral composition of oral cavity, structural organization of enamel of teeth, dynamics of pulp microcirculation and hypersensitivity of teeth. The results of our research trigger the further studying of the influence of hydrogen peroxide on the structure of tooth tissues keeping topical the issue of rapid method of evaluation of hard tissues of teeth after the whitening procedure. One of the most effective methods of evaluation of tooth structure is the Raman spectroscopy method. Using this method, you can give a qualitative assessment of the mineral composition. Objective: to evaluate the structural changes in the hard tissues of the teeth after office bleaching by Raman spectroscopy.

MATERIALS AND METHODS OF RESEARCH

The chemical method of Opalescence Xtra BOOST system with 40% of hydrogen peroxide was used for the teeth whitening.

RESULTS OF RESEARCH

Figure 5. The average spectra of enamel(I) and dentin before and after the whitening (II): a – before the whitening, b – after the whitening

Figure 6. Spectral contour decomposition of the researched samples

Figure 7. The chart of values of linear discriminant function

CONCLUSION

Spectrum deconvolution using the method of spectral contour selection and Gauss function deconvolution was made as a result of the study, which allowed under taking expanded component qualitative and quantitative analysis of enamel and dentin of the teeth after the in-office whitening procedure. Spectral changes of enamel and dentin after the teeth whitening were found in the lines of 956 cm⁻¹, 1000 cm⁻¹, 1030 cm⁻¹, 852 cm⁻¹, 877 cm⁻¹, 1152 cm⁻¹. It was shown that the process of in-office whitening causes structural changes of enamel and dentin related to reduction of organic components of teeth compared to mineral components, which is caused by oxidation of collagen matrix during the whitening process.