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BIOCOMPATIBILITY AND EFFECT ON THE GROWTH ACTIVITY OF FIBROBLAST CELL CULTURE OF METAL-FREE CERAMIC AND METAL-CERAMIC PROSTHESES

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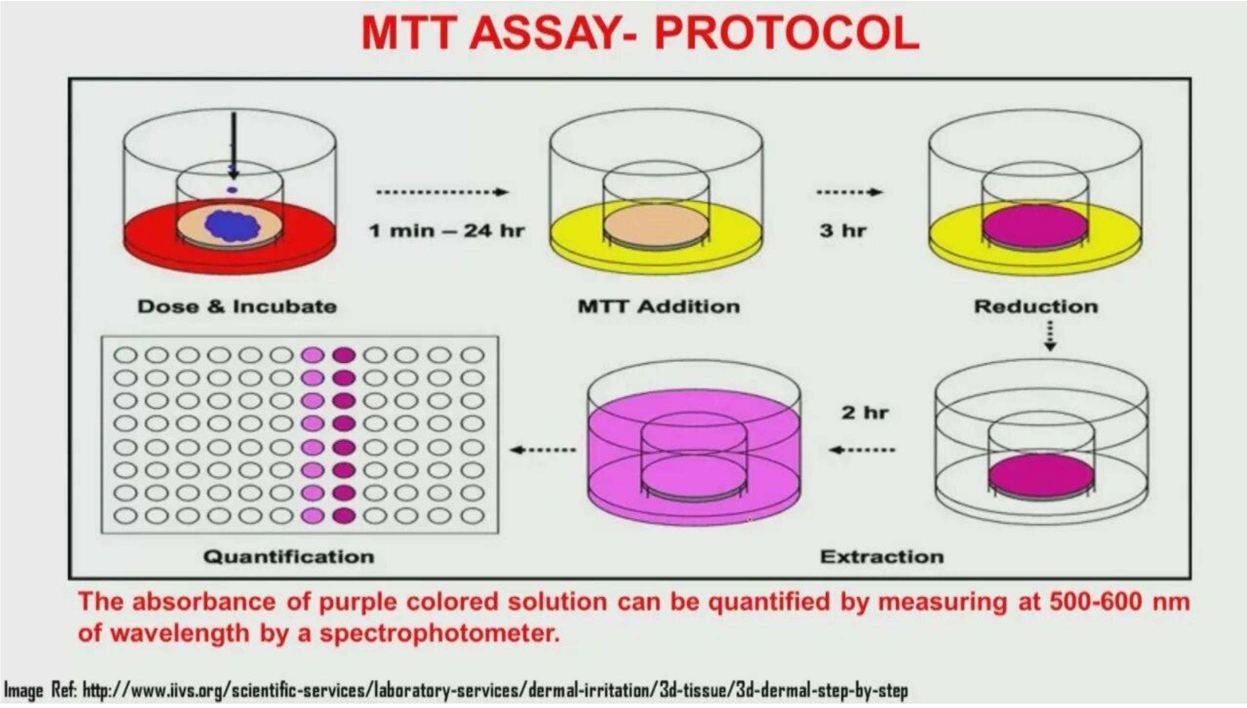
Taking into account the proliferative activity of human fibroblast culture, the biocompatibility of samples of modern dental structural materials was studied. The materials of artificial crowns are compared: crushed and cast chrome-ceramic on a cobalt frame, pressed and ceramic on a zirconium oxide frame. The advantages of a crushed chromium-cobalt frame and a metal-free material have been established.

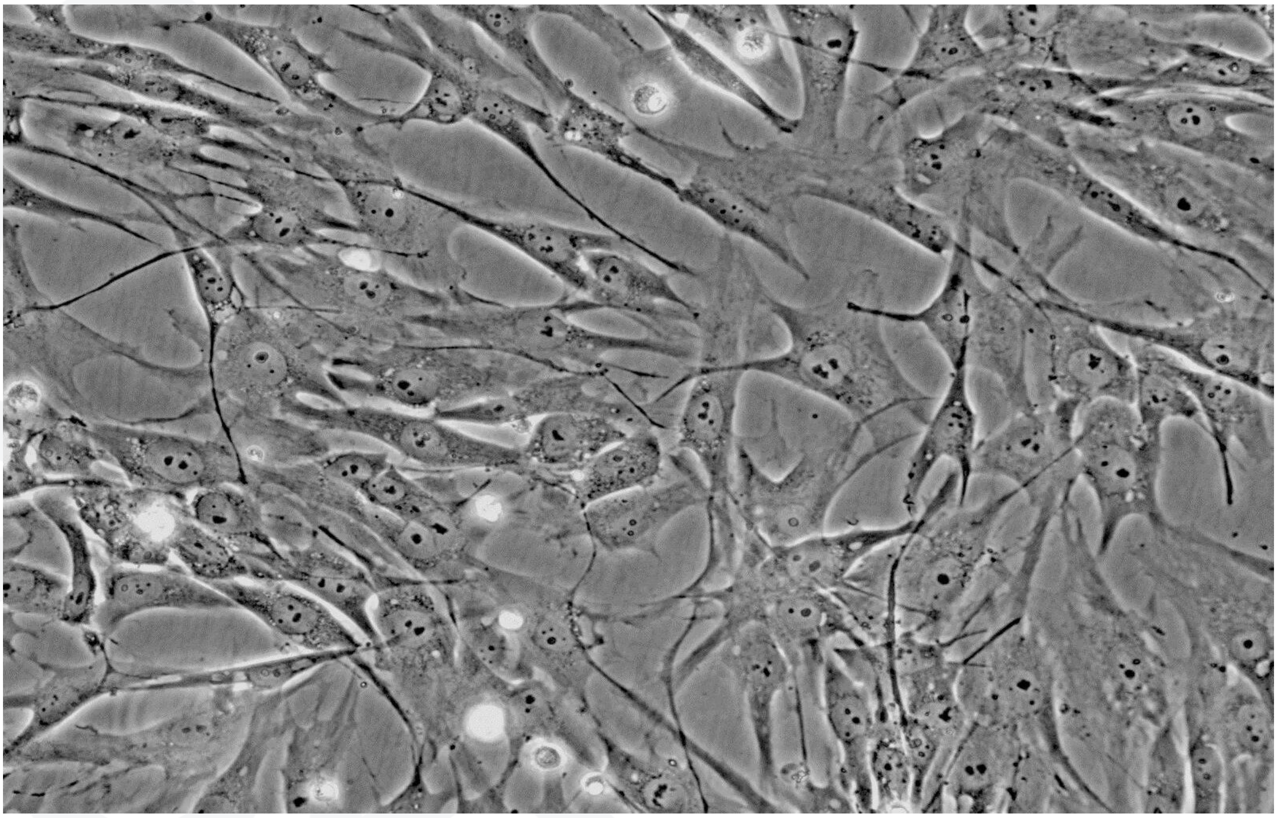
Keywords: fibroblast, material, crown, biocompatibility.

Introduction

Numerous studies on the problem of non-removable prosthetics, as well as clinical experience, have revealed factors of the negative impact of metal-ceramic prosthetics on the condition of adjacent gums.[3, 5, 6, 7]. This is due to violations in the preparation of supporting teeth, casting, alloy quality and individual sensitivity of the body [1, 2, 4]. With the development of metal-free prostheses and CAD/CAM milling technology, studies comparing the biocompatibility of modern fixed prosthesis designs are relevant. The aim of the study is to determine the degree of biocompatibility and the effect on the proliferative activity of cells of metal-free ceramics and metal-ceramic prostheses.

Materials and methods of research Studies of the biocompatibility of structural materials were carried out on cell cultures of normal human embryonic fibroblasts (FECH) using MTT tests.





Samples of: –Cermets on a crushed chromium-cobalt frame ("Gialloy", BK Giulini Gmbh, Germany); – "SHQFU Vintage MP", Japan) were examined; -Metal ceramics on a cast chrome–cobalt frame ("Starbucks Cos", S&Schefter Gmbh, Germany).; Max Ceram IPS", Ivoklar, Germany); -Ceramics on a zirconium oxide frame ("D D Bio Z X2", "Vita VM9", Germany); -Ceramics on a zirconium oxide. The coefficient K was

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calculated using the formula: K=OP5 4.5 nm (experiment)/op5 4.5 nm (control). Then the average usC coefficient was calculated for the stages of biocompatibility and proliferative activity. The results of the research and their discussion made it possible to establish a high index of the optical density of human fibroblast culture (FEH) in experiments to study the biocompatibility of modern structural materials for non-removable prosthetics.FEH growth activity was also high in the presence of cermets on a chromium-cobalt frame, ceramics on a zirconium oxide frame and press ceramics (table). Nevertheless, despite the results close to the control parameters of fibroblast cultivation without the presence of material, all the studied materials have a significant difference with the control coefficient of cell proliferation in accordance with the optical density of the cell culture in experiments on biocompatibility of cermets on a cast frame, 0.89, 0.94 on a cast frame, ceramics on a zirconium oxide frame 0.85 and ceramic press 0.82. In experiments with growth activity, the growth coefficients of the same material were 0.91, 1.00, 1.05 and 0.83. Summarizing the results of experiments on the interaction of human fibroblasts with structural materials of non-removable prostheses, zirconium oxide and crushed chromocobalt; in the case of ceramic samples on a cast chromocobalt frame (usK0.90) and press ceramics (usK0.83), in the case of cermets directly facing the cell culture in the experimental matrix. The layers of the structural samples were important, but there were small but significant differences. Consequently, when studying the biocompatibility of cermets on a cast chrome–cobalt frame to the spread of ceramic cladding - 0.89, frame -1.06; cermets on a crushed chrome-cobalt frame - 0.94 and 1.14, respectively. When studying the growth activity of FEF, these indicators are 1.15 and 0.91; 1.11 and 1.00. It is obvious that chromium cobalt has a stimulating effect on FEF in biocompatibility experiments; the crushed alloy does not affect the growth activity of fibroblasts, and the cast alloy slows it down. Ceramics do not have a significant difference in biocompatibility in frames made of cast chromium cobalt or zirconium oxide and in frames made of crushed chromium cobalt, the biocompatibility of ceramics is high, and the biocompatibility of pressed ceramics is slightly lower in metal frames and zirconium oxide frames. Frame ceramics do not differ in their effect on growth activity, and press ceramics have slightly worse indicators.

Conclusion: Thus, modern structural materials for non-removable prosthetics in human fibroblast culture (FECH) have varying degrees of biocompatibility and influence on the proliferative activity of cells.

References

1. Marjona T. OPTIMIZATION AND IMPROVEMENT OF CARIES TREATMENT IN THE FIELD OF PERMANENT TEETH FISSURES IN CHILDREN //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 10. – C. 78-84.
2. Ruziyeva K. A., Burhonova Z. K. K. Complex Application Of Magnetic Laser Therapy And Propolis Tincture For The Prevention And Treatment Of Chronic Recurrent Aphthous Stomatitis //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – T. 3. – №. 06. – C. 127-130.
3. Sevinch E., Zarafruz B. ETIOLOGICAL TREATMENT FEATURES INFLAMMATORY PERIODONTAL DISEASE //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 03. – C. 241-246.
4. Zarafruz K. S. B. THE ROLE OF ORAL CAVITY MICROORGANISMS IN THE DEVELOPMENT OF INFLAMMATION AND SOMATIC PATHOLOGY //International journal of advanced research in education, technology and management. – 2024. – T. 3. – №. 8. – C. 192-202.
5. Yusufboy S., Qobilovna B. Z. STUDY THE EFFECT OF HYGIENIC CARE ON THE MICROBIAL LANDSCAPE OF THE ORAL CAVITY IN PATIENTS USING COMBINED SPLINTING STRUCTURES WITH MODERATE PERIODONTITIS //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 02. – C. 50-55.
6. Yusufboy S., Qobilovna B. Z. FEATURES OF THE STRUCTURE OF COPD IN ELDERLY PATIENTS //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 05. – C. 363-368.
7. Sevinch E., Qobilovna B. Z. A STUDY ON THE MORPHOFUNCTIONAL STATE OF ORAL ORGAN TISSUES DURING THE USE OF NON-REMOVABLE ORTHODONTIC STRUCTURES //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 03. – C. 247-253.
8. Shaximardonova E. S., Kobilovna B. Z. RED LICHEN PLANUS OF THE ORAL MUCOSA AND ITS CLINICAL ANALYSIS OF A PATIENT WITH, ASSOCIATED WITH THE EPSTEIN—BARR VIRUS //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – T. 4. – №. 01. – C. 272-279.

9. Yusufboy S., Qobilovna B. Z. STUDY OF CHANGES IN THE ORAL CAVITY IN ENDOCRINE DISEASES //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – Т. 4. – №. 05. – С. 357-362.
10. Yusufboy S., Qobilovna B. Z. STUDY OF CHANGES IN THE ORAL CAVITY IN ENDOCRINE DISEASES //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – Т. 4. – №. 05. – С. 357-362.
11. Yusufboy S., Qobilovna B. Z. SMARTBURS II–A REVIEW OF THE ADVANTAGES OF SMART BOR //European International Journal of Multidisciplinary Research and Management Studies. – 2024. – Т. 4. – №. 02. – С. 56-60.
12. Makhmudovna T. M. et al. THE COURSE OF MALFORMATION AND CORNEAL EROSION IN TUBERCULOSIS PATIENTS //Open Access Repository. – 2023. – Т. 4. – №. 03. – С. 60-66.
13. Dilafruz K. ROOT CANAL PREPARATION AS A STAGE OF TOOTH RESTORATION //International journal of advanced research in education, technology and management. – 2024. – Т. 3. – №. 9. – С. 100-107.
14. Dilafruz K. COMPREHENSIVE TREATMENT GENERALIZED PERIODONTITIS AND CLINICAL AND RADIOLOGICAL EVALUATION OF EFFECTIVENESS //International journal of advanced research in education, technology and management. – 2024. – Т. 3. – №. 9. – С. 108-116.