

## **CERAMIC-METAL NANOCOMPOSITE MATERIALS FOR DENTAL IMPLANTS IN GERONTOSTOMATOLOGY**

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In recent years, ceramic-metal nanocomposite materials (cermets) with biological activity have become widespread. They have important applications in modern medical technologies for dental prosthetics.

It has been shown that the most promising is the production of metal ceramics of the calcium-phosphate matrix-medical titanium composition by hot pressing using special technological equipment.

Fundamentally new designs of dental implants and technological schemes for their manufacture have been developed. The use of domestic implants instead of expensive imported ones will significantly reduce their cost, ensuring accessibility for the population. This will expand the use of dental implantation methods in gerontostomatology. Currently, dental implantation in our country, even with appropriate indications in this category, is practically unavailable.

The conducted experimental and morphological study confirmed the effectiveness of the proposed implant designs, in which the optimally selected ratio of the components of the calcium phosphate material and its structure ensure fusion with living bone at a given time and the formation of a frame with the restoration of the original histological structures and the germination of blood vessels.

The use of metal-ceramics provides a solution to two problems: improving the integration of foreign bodies with living bone tissue and combating re-infection of the implant. Both unresolved problems can lead to the abandonment of artificial products. The use of metal-ceramics, which causes a minimal inflammatory reaction, ensures enhanced osseointegration due to contact of the living bone exclusively with the root part, which has a calcium phosphate composition without the inclusion of foreign elements.

The objects of study of this work were cermets based on calcium phosphate bioceramics based on hydroxyapatite and medical titanium(Ti Grade 5).

Electron microscopy methods were used to study samples obtained under different pressing modes and different ratios of components in ceramics, and mechanical tests were also carried out. The possibility of introducing components with effective bactericidal properties into the composition of the calcium phosphate material to ensure an antimicrobial effect in the process of implant engraftment was studied. The developed ceramic-metal nanocomposites based on a calcium phosphate matrix and medical titanium can be used as highly effective and reliable intraosseous dental implants in gerontostomatology.