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MEETING ABSTRACTS

CELL GROWTH ON TiO_2 NANOTUBES AND Ti FLAT SUBSTRATES COATED WITH METAL OXIDES USING ATOMIC LAYER DEPOSITION

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Titanium is one of the most widely used materials for medical and dental implants due to its resistance to body fluid effects, low ion release, great tensile strength, flexibility, and high corrosion resistance. Despite its promising properties, titanium implants tend to be encapsulated by fibrous tissue *in vivo* and show a lack of osseointegration, which can lead to infections and implant failure (*Hansson; 1983*).

To improve the surface properties of materials, the atomic layer deposition method is used, where the surface of the material is modified with one or more uniform layers of metal oxide, which directly correlates with the improvement of metal surface properties. The atomic layer deposition is the only technique that enables the deposition of very uniform and conformal layers of various materials, regardless its shape – planar as well as porous substrates (*Dvorak; 2019*).

In the present work, titanium sheets and titanium sheets with TiO_2 nanotube layers and their surface modifications were used to evaluate the adhesion, growth and proliferation of different cells. Cell adhesion and growth were investigated using fluorescence staining and cell counting. The presented results showed that surface modification of titanium sheets by atomic layer deposition has a significant effect on the biocompatibility of materials and is promising for application in implant materials.

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