Endosseous metallic implants can be colonized by bacteria during and after the surgery. As the implant related infections can lead to implant failure, many researchers suggest the development of bactericidal coatings in order to prevent the bacterial colonization in early stage\(^1\). Bactericidal coatings are mostly based on elements such as Ag, Cu and ZnO, however, these elements can induce cytotoxic effects\(^2\)\(^-\)\(^4\). Boron is beneficial to bone formation, can inhibit inflammatory process and has a broad spectrum bactericidal activity, although it has not been used in implant coatings so far\(^5\)\(^,\)\(^6\). The aim of this work was to develop a new bactericidal coating based on boron antibacterial activity. The coating was produced by plasma electrolytic oxidation (PEO) in an electrolyte containing calcium acetate, calcium glycerophosphate and disodium tetraborate for 60 s at 350 V. A group of samples was obtained in absence of boron in order to evaluate its influence on the bactericidal tests. The coating morphology and cross section were evaluated by scanning electron microscopy. The elemental composition and the crystalline structure were investigated by X-ray photoelectron spectroscopy and X-ray diffraction, respectively. The cytotoxicity of the coating was evaluated using fibroblasts cells by MTT and fluorescence assays after 1, 4 and 7 days of cell culture. The bactericidal activity was determined against *Staphylococcus aureus* strain. The coating presented a porous morphology, characteristic of the PEO process, with incorporation of Ca, P and B on the titanium dioxide. The fibroblast viability was positively affected by the boron presence, showing a higher cell viability and spread, with no cytotoxicity detected up to 7 days. The coating showed bactericidal activity, reducing the colonies forming units after 24 h of incubation. These results show boron doped coating can be a suitable tool on the foresight of implant infections.

**Keywords:** Coating, Bactericidal, Boron

**References:**

Presenting author's email: lucianec@gmail.com