Coating dental implants with hydroxyapatite may give certain advantages such as active encouragement to new bone growth, a lower rejection rate and an improved long-term prosthesis fixation. The biological properties of dental implants coated by the sandwich technique with a thin layer of hydroxyapatite and an interlayer of zirconia were evaluated. The implant samples were covered by pulsed laser deposition. The aim of this study is to evaluate the cytotoxicity and the surface characteristics of the titanium targets modified with zirconia and hydroxyapatite. We used a direct test of cytotoxicity, tests of fibroblasts adhesion and proliferation using counting of harvested cells and providing a MTT assay. No changes in the morphology or the proliferation rate of the cells used were found in the presence of the modified titanium targets. The results show adhesion and cell proliferation, which in turn implies that the studied material is not cytotoxic and is suitable for cell colonization. Titanium modified with zirconia and crystalline hydroxyapatite can improve the biological properties and so can be benefitially employed in oral bone surgery.