Corrosion Behavior of Si,Zn and Mn-doped Hydroxyapatite on the PEO-treated Surface

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초 록: Pure Titanium and alloy have been widely used in dental implants and orthopedics due to their excellent mechanical properties, biocompatibility and corrosion resistance. However, due to the biologically inactive nature of Ti metal implants, it cannot bind to the living bone immediately after transplantation into the body. In order to improve the bone bonding ability of titanium implants, many attempts have been made to alter the structure, composition and chemical properties of titanium surfaces, including the deposition of bioactive coatings. The PEO method has the advantages of short experiment time and low cost. These advantages have attracted attention recently. Recently, many metal ions such as silicon, magnesium, zinc, strontium, and manganese have received attention in this field due to their impact on bone regeneration. Silicon (Si) in particular has been found to be essential for normal bone and cartilage growth and development. Zinc (Zn) plays very important roles in bone formation and immune system regulation and promotes bone metabolism and growth. Manganese (Mn) is an essential trace metal found in all tissues and is required for normal amino acid, lipid, protein and carbohydrate metabolism. The objective of this work was research on the corrosion behavior of Si, Zn and Mn-doped hydroxyapatite on the PEO-treated surface. Anodized alloys was prepared at 270V~300V voltage in the solution containig Zn, Si, and Mn ions. Ion release test was carried out using potentidynamic and AC impedance method in 0.9% NaCl solution. The surface characteristics of PEO treated Ti-6Al-4V alloy were investigated using XRD, FE-SEM, AFM and EDS (Supported by NRF: 2015H1C1A1035241 & ; hcchoe@chosun.ac.kr).