Electrochemical evaluation of anodized aluminum applied to biomaterials

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Anodic aluminum oxide has attracted a lot of interest due to the regular arrangement of nanopores, ease of control of the nanopores diameter, large specific surface area, low cost, good thermal stability, absence of toxicity and biocompatibility. Due to these characteristics, anodic aluminum oxide structures have been used in applications such as filtration processes, biosensors, oxygen sensors, catalysis and photocatalysis. In addition, the geometric arrangement of nanopores makes it possible to use alumina as a mold for the synthesis of various nanostructures, such as nanopores, nanotubes, nanorods and nanowires that have many advantages in advanced application areas due to their unique chemical, physical, mechanical and optical properties. In the present work, the localized corrosion resistance of samples of aluminum alloy AA6061 anodized in oxalic acid solution (C2H2O4) and sulfuric acid (H2SO4) was evaluated by electrochemical techniques. Prior to the anodization stage, the samples were electrolytically polished in a solution of perchloric acid and ethanol. The results indicated superior corrosion resistance in the anodized samples in both conditions. Therefore, it is necessary to constantly advance research on the use of nanoporous anodic alumina coatings on biomaterials surfaces. Acknowledgments: The authors would like to thank CNPq for the financial support.