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[\[Image PDF \(1299K\)\]](#) [\[References\]](#)**Corrosion Resistance and Surface Characterization of Electrolyzed Ti-Ni Alloy**[Osamu FUKUSHIMA](#)<sup>1)</sup>, [Takayuki YONEYAMA](#)<sup>1)2)</sup>, [Hisashi DOI](#)<sup>1)</sup> and [Takao HANAWA](#)<sup>1)</sup>

1) Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University

2) Department of Materials Engineering, The University of Tokyo

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**Abstract:**

Ti-Ni alloy has been increasingly applied to medical and dental devices, such as coronary stents and orthodontic wires. This alloy contains nickel, which is known to give rise to cytotoxicity, metal allergy, and carcinogenicity. Therefore, the purpose of this study was to improve the corrosion resistance of Ti-Ni alloy by electrolytic treatment, whereby investigation was carried out using different acidic electrolyte compositions. As a result, specimens electrolyzed with lactic acid, water, and glycerol were found to show higher corrosion potential and release lower amount of titanium and nickel ions than mechanical-polished specimens ( $p < 0.05$ ). With the electrolytic treatment, nickel concentration in the surface oxide layer of Ti-Ni alloy decreased, and the thickness of the surface oxide layer increased. Based on the results of this study, it was shown that electrolytic treatment with suitable electrolyte could improve the corrosion resistance of Ti-Ni alloy, which is effective to produce medical and dental devices that utilize shape memory effect or superelasticity with better biocompatibility.

**Key words:**[Ti-Ni alloy](#), [Electrolytic treatment](#), [Surface characterization](#)

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