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Surface Protection of Niti- Shape Memory Alloy by Colgate Visible White Toothpaste

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Abstract: To regulate the growth of teeth people are implanted with orthodontic wires made of different materials. They clean their teeth with different types of toothpastes. During this process the materials may undergo corrosion. The main objective of this work to evaluate corrosion behavior of NiTi shape memory alloy in artificial saliva in the absence and presence of an aqueous solutions of toothpaste Colgate Visible White.

The corrosion parameters have been measured by electrochemical studies such as potentiodynamic polarization and AC impedance spectra. The surface morphology has been analysed byFourier transform infrared spectroscopy and UV-Visible absorption spectra.

The electrochemical measurements reveal that the corrosion resistance is offered by the toothpaste due to formation of protective film. The corrosion resistance of NiTi shape memory alloy in various solutions decreases in the following order: AS+ toothpaste> toothpaste>AS. It confirmed that the active principles of the ingredients of the toothpaste have coordinated with the corroding metal atoms (their ions) Ni^{2+} and Ti^{2+} through their polar atoms and formed an insoluble complex which acts as a protective film.So people implanted with orthodontic wire made of NiTi shape memory alloy need not hesitate to use Colgate Visible White toothpaste to brush their teeth.

Keywords: Orthodontic, Ingredients, Electrochemical.

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