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Deposition of apatites on titanium alloys.

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One of the challenges in contemporary bioengineering lies precisely in the employment of materials and methods that, when combined, act swiftly and effectively in bone regeneration, aiming to restore the function that the recovering tissue previously performed. In this regard, titanium and its alloys stand out concerning the use of metallic materials suitable for tissue regeneration in rehabilitation, possessing properties that favor their utilization in bone prostheses. Consequently, this study employed substrates of the Ti6-Al4-V alloy, without prior surface treatment, which were ground and polished and subjected to the deposition of apatites with and without the use of iron oxide. To achieve this, the Simulated Body Fluid (SBF) was utilized to mimic bodily fluid and induce hydroxyapatite formation. The samples were then incubated and analyzed after 21 days to allow for the deposition of apatites with and without iron oxide. Thus, the objective of this study is to establish a comparative bias regarding the potential for bone regeneration between the two solutions. To analyze the obtained results, the samples will be morphologically examined via Scanning Electron Microscopy (SEM), subjected to X-ray Diffraction (XRD) for chemical and mineralogical identification, and analyzed via Raman Spectroscopy to verify the chemical composition of the substrates. Consequently, the expectation is to obtain bioactive substrates capable of offering more effective treatments.