Titanium has been highlighted as the most indicated metallic biomaterial for biomedical devices, due to its suitable mechanical characteristics, corrosion resistance in biological fluids, and good biocompatibility [1,2,3]. One way of evaluation is through the Simulated Body Fluid (SBF) proposed by Kokubo[2]. In the present study, the bioactivity the Ti-35Nb-4Sn alloy, was evaluated with or without surface modified by SBF solution. The ingots samples were arc-melted in argon atmosphere. Subsequently, the ingots were heat treated at 1273K for 12h, water-quenched, cold-rolled to 46 percent of reduction. The surface of the samples, were modified by chemical treatment with NaOH-CaCl2 solution and after the sample were heated to 873K for 1h in an air atmosphere. To do the SBF bioactivity assay, the samples were immersed in the SBF solution at different times (1, 3, 7 and 14 days). Was used X-Ray Diffraction (XRD) to check the apatite formation, in the range of 3-50° in the 2theta angle, with 10° glancing angle. After one day of immersion in SBF solution, the Scanning Electron Microscope (SEM) images, shows to samples with surface treatment the formation of calcium phosphate-like structures on the surface, and to samples with 7 and 14 days of immersion, note whether apatite nucleation on the surface. However, to the samples without surface treatment, the nucleation of calcium phosphate was observed from third day and at the end of 14 days, was observed the precipitation of apatite on the surface of the samples. In relation to the diffractogram of the samples, the peaks observed at 2theta = 25°, was associated to a crystalline phase of Anatase, and the peaks at 2theta = 38°, was associated to the substrate. However, after 14 days of the immersion, in the XRD analysis, the presence of new peaks were observed, to both the sample, without and with surface treatment. From the third day of immersion, the peak observed at theta = 34° was attributed to beta -Calcium Phosphate. The thermal and chemical treatment of the Ti-35Nb-4Sn alloy surface, improved the ability of apatite formation.