

## **ABSTRACT**

*Microtia is an ear disorder accompanied by a narrow or unformed canal that occurs in around 2 out of 10,000 births. Sufferers can experience anxiety, lack of self-confidence, and depression. The aim of this research is to determine the characteristics of silicone RTV H-00 / TiO<sub>2</sub> nanoparticles to be a candidate for making a composite auricular prosthesis obtained with an addition percentage of 2%, 4%, 6% (w/w) using the 3D printing method. The characterization carried out included FTIR, tensile and degradability tests. The FTIR test results prove the appearance of silicone rubber at wave numbers 1067.80 - 1069.92cm<sup>-1</sup>, but after adding TiO<sub>2</sub> nanoparticles it does not show a change in waves so the resulting spectrum is similar. Tensile testing showed that the modulus of elasticity obtained a control sampel value of 0.028 MPa, a 2% TiO<sub>2</sub> Nanoparticles sampel of 0.008 MPa, a 4% TiO<sub>2</sub> Nanoparticles sampel of 0.006 MPa, and a 6% TiO<sub>2</sub> Nanoparticles sampel of 0.016 MPa. The tensile strength value obtained for the control sampel was 0.045 MPa, the 2% TiO<sub>2</sub> Nanoparticles sampel was 0.043 MPa, the 4% TiO<sub>2</sub> Nanoparticles sampel was 0.036 MPa, and the 6% TiO<sub>2</sub> Nanoparticles sampel was 0.040 MPa. The elongation value obtained for the control sampel was 200.062 mm, the 2% TiO<sub>2</sub> Nanoparticles sampel was 199.308 mm, the 4% TiO<sub>2</sub> Nanoparticles sampel was 199.952 mm, and the 6% TiO<sub>2</sub> Nanoparticles sampel was 199.002 mm. The results of each sampel after adding TiO<sub>2</sub> Nanoparticles tended to decrease and none were close to the values for original cartilage. The degradability test showed that the control sampel was 1.003 grams, the 2% TiO<sub>2</sub> Nanoparticles sampel was 1.024 grams, the 4% TiO<sub>2</sub> Nanoparticles sampel was 0.945 grams, and the 6% TiO<sub>2</sub> Nanoparticles sampel was 0.944 grams, proving that the sampel did not experience a significant change in weight compared to the initial weight of the sampel.*

**Keywords:** Auricular Prosthesis, 3D Printing Method, Microtia, RTV (Room Vulcanizing Temperature), TiO<sub>2</sub> (Titanium Dioxide).