

### ***Abstract***

*Natural material are found in Indonesia and can be used as composite materials, such as cotton, bamboo, hemp, flax, sisal, jute, hemp, etc. Composite is a material consisting of two or more constituents with different properties, produce new materials that have unique and extraordinary properties compared to the original constituents. In this comparative study will discuss about composites with polylactide matrix with three different reinforcement, namely hemp fiber, sisal fiber, and walnut shell wich will be treated with alkali (NaOH) to see the tensile strength of each composite that will be taken from international journals. Comparative studies begin by looking for journals that conduct tensile tests on the polylactide matrix, then match the data between journals. The fabrication of composite process using twin screw extruder for hemp fiber, internal mixer for sisal fiber, and melt mixer for walnut shell. The tensile strength data will be compare and analized. Tensile test will be done according to ASTM D 638, "Standard Test Method for Tensile Properties of Plastics" and observe SEM (Scanning Electron Microscope) results. The results of comparison study shows that hemp fiber provide the strongest tensile strength as many as 75 MPa.*

***Keyword:*** *Hemp, Sisal, Walnut shell, Polylactide, NaOH, Tensile strength*