

NUMERICAL STUDY OF PHYSICAL CHARACTERISTICS OF NEW MATERIALS SELATIC (*Semi-elastic Plastic*)

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ABSTRACT

Biodegradable plastic is a type of eco-friendly plastic because it comes from natural materials that can decompose easily, one of the examples is the cellulose of the *Sansevieria trifasciata*. The purpose of this study is producing semi-elastic plastic using new materials, namely SELATIC and to observe the relation between the concentration of the *Sansevieria trifasciata* extract. The process begins with the manufacture of SELATIC gel which combines PVA, HPMC, Glycerin, 70% Ethanol into a solution of the *Sansevieria trifasciata* extract which has varied concentrations ranging from 0%, 1%, 3%, and finally 5%. Then with the printing process, up to the testing stage. Several tests have been carried out to see the physical of SELATIC, such as netral because it has number of pH 7, easy to dissolved and decomposed by water, also have a density that tend to increase with the viscosity increasing. However, in this case, it is very interesting to calculate the modulus of elasticity, which is the value of the elasticity of a material, proving that the *Sansevieria trifasciata* is a new material that causes plastic to increase elasticity as an effect on SELATIC mechanics, in addition to its physical properties. Through numerical studies conducted by researchers, the researchers obtained results in the form of semi-elastic plastic with an elastic modulus value of 1 MPa in the largest sample of the *Sansevieria trifasciata* of 5%.

Keyword: Biodegradable plastic, *Sansevieria trifasciata*, PVA, HPMC, gel, Physical and mechanical characteristic, Modulus of elastisiticity, New material