ABSTRACT

Plastic products are commonly used by society in daily life for food or beverage packaging. Plastic raw materials are derived from petroleum, which is limited, non-renewable, and cannot be quickly degraded by decomposing microbes in the soil. Therefore, an innovation in environmentally friendly plastic or bioplastic made from natural materials such as sugarcane bagasse and spices is needed. This research innovation product is in the form of biofoam, named BISTIK-RT. The aim of this study is to determine the characteristics of thickness, tensile strength, biodegradable properties, and antibacterial properties of BISTIK-RT. This study used three treatments and three repetitions, with the independent variable being the mass of sugarcane bagasse and spices. The obtained data were statistically tested using normality tests, homogeneity tests, and ANOVA. The results showed that the average thickness was more than 3 mm, with significant differences between treatments. The tensile strength was more than 5 MPa, with no significant differences between treatments. Based on the biodegradability test, BISTIK-RT had fragile and soft physical characteristics, with some parts degrading. According to the antibacterial test, an inhibition zone was observed in the BISTIK-RT test sample, with no significant differences between treatments. The conclusion of this study is that sugarcane bagasse and spices can be processed into biofoam-type bioplastic with thickness, tensile strength, and biodegradable properties that meet the criteria for ideal bioplastic and possess antibacterial properties. The best treatment composition was 50% sugarcane bagasse, 50% spice residues, with 4% chitosan and 5% sorbitol, although the differences between treatments were not significant.

Keywords: antibacterial, bioplastic, BISTIK-RT, chitosan, sorbitol.