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## Hydrophobic Bioplastic From Agar Using Chitosan and Beeswax as a Hydrophobic Coating

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These days, bioplastics containing natural components are commonplace. But bioplastics have a flaw: water quickly dissolves or breaks them down, which prevents them from performing as well as they could. Therefore, studies on coating materials capable of rendering bioplastics hydrophobic are required. The purpose of this study was to find out how chitosan-beeswax solution works as a hydrophobic coating on agar-based bioplastics, finding the best ratio of chitosan-beeswax solution, and to pave the way for the wider application of bioplastics in everyday life. Agar, glycerin, and distilled water were combined at a temperature of 90 °C to create bioplastic, which was then poured into a mold and allowed to dry for two days in the sun. Hydrophobic film was made with a mixture of 0% chitosan-vinegar solution; 0.5%; 1%; 2.5% wt/v and beeswax-(2-propanol) solution with varying concentrations of 0%, 0.5%, 1%; 2.5% wt/v using a homogenizer to mix the two ingredients. Contact angle, tensile test, biodegradable test and functional group analysis of chitosan-beeswax were carried out to determine the quality of bioplastic. The results of the contact angle test from a mixture of beeswax as a fixed variable and chitosan as an independent variable showed a significant increase in contact angle up to a chitosan concentration of 1% wt/v. Meanwhile, the contact angle decreased at a chitosan concentration of 2.5% wt/v chitosan. Furthermore, a mixture of 0.5% chitosan as a fixed variable with beeswax as an independent variable showed an increase in the contact angle at a concentration of 1% wt/v beeswax. But the contact angle decreased at a concentration of 2.5% wt/v beeswax. From the results of this research, it can be seen that a mixture of beeswax and chitosan can become a hydrophobic coating, and a mixture of 1% wt/v beeswax and 0.5% wt/v chitosan has the best results.

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