ABSTRACT

ADDITION OF KECOMBRANG STEM EXTRACT IN THE MANUFACTURING AND CHARACTERIZATION OF CHITOSAN-BASED ANTIOXIDANT PLASTIC

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Kecombrang plant is one of the many plants that grow in Indonesia, but this plant has not been used optimally. Until now, the kecombrang plant is only used to make chili sauce and is used as a cleaning agent. This plant is composed of fruit, flowers, stems, leaves, and rhizomes which have the potential as an agent of antioxidant compounds. The highest antioxidant compounds were found in the inner stem of kecombrang with IC_{50} 52,345 ppm. The use of kecombrang as a food packaging material has never been done before, this research was carried out to increase the use of kecombrang plants. This study aims to extract the stems of the Ciomas kecombrang, make and characterize chitosan-based antioxidant plastics, and find out the effect of kecombrang stem extracts on the mechanical properties and antioxidant activity of the resulting plastics. The process of making antioxidant plastic begins with the extraction of kecombrang stems using the maceration method, analyzing the bioactive compounds contained in the extract using GCMS, making chitosan-based antioxidant plastics, and testing its mechanical properties and antioxidant properties. Antioxidant plastic was made by adding 3 grams of chitosan in 96.5 ml of 1% acetic acid at a temperature of 50 ^{0}C for 60 minutes, after a homogeneous solution was added 0.5 ml of glycerol with various kecombrang stem extracts [0 gram, 0.5 gram, 1 gram, 1.5 grams, and 2 grams]. The solution the film is printed on the glass plate evenly and kept in the oven at 40 $^\circ$C for 24 hours. Furthermore, the antioxidant plastics were analyzed for their antioxidant properties and mechanical properties. The results showed that from 500 grams of kecombrang stem powder, 554.33 ml of thick extract was produced with a density of 0.9851 g/ml and a viscosity of 1.43 cP. Then the concentrated extract of the kecombrang stem was successfully formulated into a chitosan plastic emulsion with the best composition, namely the addition of 0.5 gram because it provided the best mechanical properties and antioxidant properties.

Keywords: antioxidant, kecombrang, mechanical properties