

FORMULATION AND OPTIMIZATION OF *PEEL-OFF CLAY BENTONITE MASK WITH BASIS OF HPMC AND AMYLOPECTIN CASSAVA STARCH (*Manihot esculenta*) AS A GELLING AGENT*

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ABSTRACT

Clay bentonite has the ability to absorb and remove dirt on the skin, so it is developed into a peel-off mask. The clay bentonite *peel-off* mask will form a transparent film layer so that it can be peeled off when it has dried. To provide optimal results, it is combined with a gelling agent. In this study, a combination of gelling agents in the form of HPMC and cassava amylopectin was used. The purpose of this study was to optimize the mask formula of clay bentonite with HPMC and cassava amylopectin as a gelling agent using the D-Optimal Mixture Design method. Formula optimization is done using the D-Optimal Mixture Design method using two variables, namely the independent variable (X) and the dependent variable (Y). Independent variables include HPMC (X₁) and Amylopectin (X₂), while the dependent variable (response variable) is viscosity (Y₁), spreadability (Y₂), and dry time (Y₃). The results of the optimization of the mask formulation of clay bentonite off were analyzed using ANOVA to determine the relationship pattern of these two variables. From the experimental data, there were three response models, two of which were significant (p < 0.05), namely the quartic model for viscosity and the linear model for spreadability, whereas in the dry time response the mean model was not significant. The optimal formula obtained was HPMC 1.50171% and amylopectin 2.99829%. The results of verification between prediction response and observations on the optimal formula indicate that only two good models were obtained (bias < 10%). The optimal formula characterization was viscosity (Y₁) of 13970 cp, spreadability (Y₂) of 6.4 cm², pH of 5.5 and organoleptic of the preparation consists of a thick gel, the distinctive smell of bentonite, and gray. So that it can be concluded that, D-Optimal Mixture Design can be used to optimize the clay bentonite peel-off mask formula.

Keywords: *peel-off* mask, bentonite, HPMC, amylopectin, *D-Optimal Mixture Design*