



The Effect of Casein Modification and Inulin on Physicochemical Properties of Mozzarella Cheese Analogue Microwavable

Purwadi^{1*}, Abdul Manab¹, Imam Thohari¹, Herly Evanuarini¹

¹Department of Animal Products Technology, Faculty of Animal Husbandry, Brawijaya University, Jl. Veteran Malang, East Java 65146, Indonesia

Abstract : The effect of casein modification on physicochemical characteristics of Mozzarella cheese analogue microwavable was studied. The research was divided into three stages. The first stage was to find out a better physicochemical properties of casein with cross linking modification, while the second stage was to find out a better physicochemical properties of Mozzarella cheese analogue with the addition of casein modified and inulin at several ratios. The third stage was to study the influence of microwave power level on physicochemical properties of Mozzarella cheese analogue. Experimental results showed that the effect of pH value and level of CaCl₂ of modified casein did not give a significantly difference effect ($p>0.05$) on protein solubility, however it gave a significantly difference effect on calcium solubility at a confidence level of 95%. Furthermore, the pH values and level of CaCl₂ on the rheological parameters showed that storage modulus (G') and loss modulus (G'') decreased with the increasing of coagulation temperature, approximately 5 – 40⁰C, and the results obtained using SDS-PAGE indicated that the interaction between casein micelles at pH 4.2 and 4.6 was more intensive than at pH 5.0. Additionally, ratio of casein modified and inulin did not give a significantly difference effect ($p>0.05$) on meltability and gave a significantly difference effect ($p<0.05$) on fracture point and stretchability of Mozzarella cheese analogue. The porosity structure of Mozzarella cheese analogue was attained when ratio of casein modified:inulin 80:20, while for the ratio 70:30; 60:40 and 50:50, the size and porosity structure was less and more swollen. Furthermore, statistical analysis revealed that microwave power level gave a significantly difference effect ($P<0,05$) on water activity, colour ($L^*a^*b^*$ values), fracture point, and expansion of Mozzarella cheese.

Keywords: modified casein, Mozzarella cheese, crosslink, inulin, microwave, physicochemical properties.