

## KINETIKA REAKSI PENCOKLATAN PADA PRODUK KRIMER KENTAL MANIS *PLAIN* PASCA PROSES *MIXING*

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Krimer kental manis (KKM) merupakan produk turunan susu yang kaya kandungan gula. Konsentrasi gula yang tinggi mengakibatkan KKM menjadi produk yang rentan mengalami reaksi pencoklatan selama proses pembuatannya. Reaksi pencoklatan dapat terjadi saat produk pasca proses *mixing* harus tertahan hingga berjam-jam di tangki mixing akibat terjadi beberapa kendala selama proses produksi. Penelitian ini bertujuan untuk menganalisis kinetika reaksi pencoklatan selama produk KKM *plain* pasca *mixing* terhadap perubahan parameter nilai mutu yaitu tingkat kecerahan, tingkat kemerahan, tingkat kekuningan, dan total padatan.

Produk KKM *plain* pasca *mixing* diberi perlakuan berupa pemanasan dan agitasi kontinu pada suhu 45, 55, 65, dan 75°C. Analisis mutu dilakukan setiap 2 jam selama 8-14 jam. Data perubahan parameter nilai mutu dianalisis menggunakan persamaan Arrhenius untuk memperoleh model persamaan hubungan suhu dan waktu pemanasan.

Persamaan Arrhenius yang diperoleh diaplikasikan untuk menentukan penurunan tingkat kecerahan yaitu  $y = -7368,7x + 17,16$ , kenaikan tingkat kemerahan  $y = 10868x + 29,017$ , kenaikan tingkat kekuningan  $y = -7946,8x + 22,15$  dan kenaikan total padatan  $y = -7050,8x + 19,297$ . Berdasarkan persamaan tersebut pada suhu 45, 55, 65, dan 75 °C tingkat pencoklatan diprediksi akan tercapai secara berturut-turut pada 17,36– 21, 23 jam, 8,76 – 8,96 jam, 3,86 – 4,95 jam, dan 1,8 – 2,03 jam.

Kata kunci: krimer kental manis, kinetika reaksi, pencoklatan, tingkat kecerahan, tingkat kemerahan, tingkat kekuningan, total padatan.

## **BROWNING KINETICS REACTION OF *PLAIN* SWEETENED CONDENSED CREAMER AFTER MIXING PROCESS**

### **ABSTRACT**

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Sweetened condensed creamer (SCC) is a derivative product of milk which has high sugar content that caused SCC is susceptible to browning. Browning reactions can occur when the product of after mixing process has to be held for hours in the mixing tank because of several obstacles during the production process. This research aim is to analyze the browning reaction kinetics of SCC after mixing product due to its quality parameters value. Those are lightness degree, reddish degree, yellowish degree, and total solids content.

SCC of after mixing process was heated and agitated continuously at 45, 55, 65, and 75°C. The analysis is carried out every 2 hours for 8-14 hours. Data changes in parameter values were analyzed using Arrhenius equation to obtain the kinetics equation model that showed the relation between temperature and holding time in changes of quality value.

The Arrhenius equation obtained was applied to determine the decrease in lightness level, that is  $y = -7368.7x + 17.16$ , increase in reddish level that is  $y = 10868x + 29.017$ , increase in yellowish level that is  $y = -7946.8x + 22.15$  and increase in total solids content that is  $y = -7050.8x + 19.297$ . Based on these equations, at 45, 55, 65, and 75°C the browning points was predicted to reach at 17.36 – 21.23 hours, 8.76 - 8.96 hours, 3.86 – 4.95 hours, and 1.8 - 2.03 hours.

Keywords: sweetened condensed creamer, kinetics reaction, browning reaction, lightness degree, reddish degree, yellowish degree, total solids content



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