

ANALISIS PERUBAHAN KANDUNGAN NUTRISI PADA SUSU SAPI PASTEURISASI DARI *RAW MILK* HINGGA *FINISHED GOOD* DI PT GREAT GIANT PINEAPPLE, LAMPUNG

INTISARI

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Susu sapi merupakan bahan pangan hewani yang mengandung nutrisi esensial seperti lemak, protein, laktosa, dan mineral yang penting dalam mendukung kebutuhan gizi masyarakat. Dalam industri pengolahan susu, tahapan produksi seperti separasi, homogenisasi, dan pasteurisasi digunakan untuk menjamin keamanan, stabilitas fisik, serta memperpanjang umur simpan produk. Namun, proses-proses tersebut juga berpotensi menyebabkan perubahan kandungan nutrisi. Observasi awal di Dairy Factory PT Great Giant Pineapple menunjukkan adanya indikasi penurunan kadar lemak serta variasi nilai nutrisi lainnya selama proses produksi, sehingga diperlukan analisis untuk mengidentifikasi perubahan yang terjadi.

Penelitian ini dilakukan secara kuantitatif dengan pendekatan deskriptif dan komparatif menggunakan rancangan *repeated measures design*. Analisis difokuskan pada lima parameter nutrisi utama, yaitu kadar lemak, protein, laktosa, *total solid*, dan *solid non-fat*. Pengambilan sampel dilakukan pada empat titik kritis proses produksi: *balance tank (raw milk)*, homogenisasi, *silo tank* (setelah pasteurisasi), dan pengemasan (*finished good*/produk akhir). Analisis kandungan nutrisi dilakukan menggunakan alat Lactoscope 300, sedangkan data hasil pengukuran dianalisis dengan statistik deskriptif serta uji ANOVA dan *Friedman Test* untuk mengetahui perubahan signifikan antar tahapan proses. Hasil penelitian ini diharapkan menjadi dasar ilmiah dalam pengendalian mutu dan optimalisasi proses produksi susu sapi pasteurisasi.

Hasil penelitian menunjukkan bahwa proses produksi memberikan pengaruh signifikan terhadap perubahan komposisi nutrisi ($p < 0,001$). Kadar lemak menurun dari 3,76% menjadi 3,45%, protein dari 3,32% menjadi 3,01%, dan *total solid* dari 12,88% menjadi 12,52%. Laktosa mengalami fluktuasi, turun pada tahap homogenisasi dari 4,91% menjadi 4,70% kemudian meningkat kembali hingga stabil pada produk akhir menjadi 4,85%. *Solid non-fat* juga menunjukkan fluktuasi, dengan penurunan signifikan dari 9,03% menjadi 8,80% setelah homogenisasi, kemudian meningkat kembali menjadi 8,97% pada tahap *silo tank* dan tetap stabil pada produk akhir.

Kata kunci: Kandungan nutrisi, pasteurisasi, susu sapi

**ANALYSIS OF NUTRITIONAL CONTENT CHANGES IN PASTEURIZED
COW'S MILK FROM RAW MILK TO FINISHED GOOD AT PT GREAT
GIANT PINEAPPLE, LAMPUNG, INDONESIA**

ABSTRACT

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Cow's milk is an essential animal-based food product containing vital nutrients including fat, protein, lactose, and minerals required for human nutrition. In dairy processing, multiple treatment stages such as separation, homogenization, and pasteurization are applied to ensure product safety, enhance stability, and extend shelf life. However, these processing operations can alter the nutritional composition of milk. Preliminary observations at the Dairy Factory of PT Great Giant Pineapple indicated reductions in fat content and variations in other nutritional parameters during processing, necessitating to evaluate these compositional changes.

This research employed a quantitative methodology using descriptive and comparative approaches with repeated measures design. The study focused on five primary nutritional parameters: fat, protein, lactose, total solids, and solid not-fat. Sample collection was conducted at four critical production stages: balance tank (raw milk), homogenization, silo tank (post-pasteurization), and packing stage (finished goods). Nutritional analysis was performed using Lactoscope 300 instrumentation, with data processed through descriptive statistics also ANOVA and Friedman Test to identify statistically significant changes across processing stages. The findings are expected to provide scientific basis for quality control enhancement and process optimization in pasteurized milk production.

The results showed that the production process significantly influenced milk nutritional composition ($p < 0.001$). Fat content decreased from 3.76% to 3.45%, protein declined from 3.32% to 3.01%, and total solids reduced from 12.88% to 12.52%. Lactose exhibited fluctuation patterns, showing initial reduction during homogenization from 4.91% to 4.70% followed by recovery and stabilization in the final product to 4.85%. Solids-not-fat similarly demonstrated fluctuation behavior, with significant decrease from 9.03% to 8.80% after homogenization, followed by recovery to 8.97% at silo tank stage and stabilization in finished goods.

Keywords: Nutritional content, pasteurization, cow's milk