ABSTRAK

RAVITA BUDIARTI., 2023, ANALISIS KALSIUM (Ca) PADA SUSU SAPI MURNI DI DAERAH BOYOLALI DENGAN METODE SPEKTROFOTOMETRI SERAPAN ATOM (SSA), SKRIPSI, PROGRAM STUDI S1 FARMASI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. Mardiyono, M. Si dan apt. Ganet Eko Pramukantoro, S.Farm., M.Si.

Susu adalah satu diantara bahan terkaya dengan zat makanan serta sering dikonsumsi oleh khalayak umum. Penelitian ini dilakukan menggunakan metode spektrofotometri serapan atom (SSA) berdasarkan metode destruksi. Destruksi berguna untuk memutus rantai ikatan antara C, H dan O sebagai komponen utama susu. Tujuan penelitian ini untuk melihat berapa kandungan kalsium pada susu sapi murni yang beredar di daerah Gladagsari, Boyolali.

Penelitian ini menggunakan tiga sampel yang diperoleh dari daerah Boyolai. Pengujian kualitatif menggunakan pereaksi warna HCl $0,1N+Na_2S$, dan $(NH_4)_2CO_3$, dan kuantitatif menggunakan SSA pada panjang gelombang 422,7 nm, kemudian dilakukan validasi metode dengan parameter linieritas, akurasi, presisi, LOD, LOQ, sensitivitas, dan range.

Pada pengujian kualitatif HCl 0,1N ditambah Na_2S, dan $(NH_4)_2CO_3$ ketiga sampel positif mengandung kalsium. Validasi metode analisis menghasilkan linieritas=0,9995; RSD=1,41%; % Recovery =97,53 %; LOD=1,1507 mg/L; LOQ=3, 4870 mg/L, sensitivitas=0,01423, dan range konsentrasi terendah sebesar 1,981 mg/L, sedangkan analit tertinggi yaitu 2, 074 mg/L. Kadar kalsium pada sampel dengan SSA berturut-turut sampel A = 399,3 ± 0,08327, sampel B = 422,0 ± 0,34641, dan sampel C = 465,7 ± 0,1059. Ketiga sampel ini diatas nilai kadar yang ditetakan Kemenkes RI 2018. Terdapat perbedaan yang bermakna antara sampel 1 dan sampel 3.

Kata kunci : susu, kalsium, destruksi, spektofotometri serapan atom, validasi metode

ABSTRACT

RAVITA BUDIARTI., 2023, ANALYSIS OF CALCIUM (Ca) IN PURE COW'S MILK IN THE BOYOLALI AREA USING ATOMIC ABSORPTION SPECTROPHOTOMETRY (ASA) METHOD, THESIS, BACHELOR OF PHARMACEUTICAL STUDY PROGRAM, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. Mardiyono, M.Si and apt. Ganet Eko Pramukantoro, S.Farm., M.Sc.

Milk is one of the ingredients that is consumed as a food substance and is often consumed by the general public. This research was conducted using the atomic absorption spectrophotometry (AAS) method based on the destruction method. Destruction is useful for breaking the bond chain between C, H and O as the main components of milk. The purpose of this study was to see how much calcium content is in pure cow's milk circulating in the Gladagsari area, Boyolali.

This study used three samples obtained from the Boyolai area. Qualitative testing used the color reagent HCl 0.1N+Na_2S, and $(NH_4)_2CO_3$, and quantitatively used AAS at a wavelength of 422.7 nm, then method validation was carried out with parameters of linearity, accuracy, precision, LOD, LOQ, sensitivity, and range.

In the qualitative test of 0.1N HCl plus Na2S, and (NH4)2CO3 all three samples were positive for calcium. The validation of the analytical method produces linearity = 0.9995; RSD=1.41%; % Recovery = 97.53 %; LOD=1.1507 mg/L; LOQ=3.4870 mg/L, sensitivity=0.01423, and the lowest concentration range was 1.981 mg/L, while the highest analyte was 2.074 mg/L. The calcium levels in the samples with SSA were in a row sample A = 399.3 ± 0.08327, sample B = 422.0 ± 0.34641, and sample C = 456.7 ± 0.1059. These three samples are above the levels set by the Ministry of Health of the Republic of Indonesia in 2018. There is a significant difference between sample 1 and sample 3.

Keywords: milk, calcium, destruction, atomic absorption spectrophotometry method, validation