

**PENETAPAN KADAR VITAMIN C PADA TABLET
EFFERVESCENT DALAM BERBAGAI SUHU PENYAJIAN
MENGUNAKAN METODE KOLORIMETRI DENGAN PEREAKSI
AMONIUM MOLIBDAT**

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ABSTRAK

Vitamin C merupakan vitamin penting bagi tubuh yang berperan sebagai antioksidan. Salah satu bentuk sediaan vitamin C adalah tablet effervescent yang dilarutkan dalam air. Namun, sifat vitamin C yang mudah terdegradasi karena suhu menjadi pertimbangan penting dalam penyajiannya. Penelitian ini bertujuan untuk memvalidasi metode analisis vitamin C secara spektrofotometri sinar tampak menggunakan pereaksi amonium molibdat, serta mengevaluasi pengaruh suhu pelarut terhadap kadar vitamin C. Rangkaian penelitian meliputi uji kinetika reaksi, penentuan panjang gelombang maksimum, validasi metode, penetapan kadar, dan analisis statistik. Panjang gelombang maksimum diperoleh pada 752 nm dan waktu inkubasi optimal adalah 30 menit. Hasil validasi menunjukkan linearitas sangat baik ($r = 0,999$), akurasi berada dalam rentang 98–102%, serta presisi dengan %RSD sebesar 1,63%. Penetapan kadar menunjukkan hasil masing-masing sebesar $64,14\% \pm 1,78$ ($10^{\circ}\text{C} \pm 2^{\circ}\text{C}$), $97,81\% \pm 0,64$ ($25^{\circ}\text{C} \pm 2^{\circ}\text{C}$), dan $0,81\% \pm 0,12$ ($40^{\circ}\text{C} \pm 2^{\circ}\text{C}$). Hasil yang didapat dianalisis menggunakan uji one way ANOVA, hasil yang didapat menunjukkan bahwa perbedaan antar semua kelompok suhu bersifat signifikan ($p < 0,05$), yang mengindikasikan bahwa suhu pelarut berpengaruh nyata terhadap kestabilan dan kadar vitamin C yang terlarut dalam tablet effervescent.

Kata kunci: amonium molibdat, spektrofotometri, suhu pelarut, tablet effervescent, vitamin C

**DETERMINATION OF VITAMIN C CONTENT IN EFFERVESCENT
TABLETS AT VARIOUS SERVING TEMPERATURES USING A
COLORIMETRIC METHOD WITH AMMONIUM MOLYBDATE
REAGENT**

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ABSTRACT

Vitamin C is an essential nutrient for the body, functioning as an antioxidant. One common dosage form of vitamin C is effervescent tablets, which are dissolved in water before consumption. However, the tendency of vitamin C to degrade due to temperature makes solvent temperature an important factor to consider. This study aimed to validate a method for analyzing vitamin C using visible spectrophotometry with ammonium molybdate reagent and to evaluate the effect of solvent temperature on vitamin C content. The research involved several stages, including reaction kinetics testing, determination of maximum wavelength, method validation, content determination, and statistical analysis. The maximum wavelength was found to be 752 nm, and the optimal incubation time was 30 minutes. The validation results showed excellent linearity ($r = 0.999$), accuracy within the range of 98–102%, and good precision with a %RSD of 1.63%. The vitamin C content obtained at $10^{\circ}\text{C} \pm 2^{\circ}\text{C}$, $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, and $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ was $64.14\% \pm 1.78$, $97.81\% \pm 0.63$, and $0.81\% \pm 0.12$, respectively. The data were analyzed using one-way ANOVA, which indicated that the differences among all temperature groups were statistically significant ($p < 0.05$), suggesting that solvent temperature has a significant effect on the stability and dissolved concentration of vitamin C in effervescent tablets.

Keywords: ammonium molybdate, spectrophotometry, solvent temperature, effervescent tablet, vitamin C