

**PENGEMBANGAN METODE ANALISIS NITRIT  
DALAM PRODUK OLAHAN SAYURAN HASIL FERMENTASI  
SECARA SPEKTROFOTOMETRI UV-VIS**

Ayu Pratiwi Muyasyaroh  
11/317002/PA/14120

**INTISARI**

Pengembangan metode analisis nitrit dalam produk olahan sayuran hasil fermentasi menggunakan asam 4-aminobenzoat dan N-(1-naftil) etilendiamin dihidroklorida (NEDA) secara spektrofotometri UV-Vis telah dilakukan. Analisis dilakukan dengan cara mereaksikan ion  $\text{NO}_2^-$  dengan asam 4-aminobenzoat sebagai sumber amina untuk membentuk ion benzenediazonium yang kemudian dikopling dengan NEDA membentuk senyawa azo yang berwarna merah keunguan.

Optimasi panjang gelombang, waktu kestabilan senyawa azo, konsentrasi asam dan rasio mol telah dilakukan. Tahap selanjutnya metode divalidasi berdasarkan parameter validasi yang meliputi linieritas, sensitivitas, batas deteksi, batas kuantifikasi, ketelitian (presisi) dan ketepatan (akurasi). Metode yang telah divalidasi kemudian diaplikasikan untuk menentukan konsentrasi nitrit dalam produk olahan sayuran hasil fermentasi.

Absorbansi senyawa azo mencapai optimum pada nilai panjang gelombang 548 nm dan absorptivitas molar ( $\epsilon$ ) sebesar  $4,9334 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1}$ . Batas deteksi dan kuantifikasi masing-masing sebesar 0,00893 mg/L dan 0,0271 mg/L, dengan %RSD sebesar 1,21% dan persentase perolehan kembali memiliki nilai berkisar 92 – 97%. Konsentrasi nitrit yang ditemukan dalam produk olahan sayuran hasil fermentasi menunjukkan nilai konsentrasi nitrit sebesar  $2,506 \pm 0,0036 \text{ mg/kg}$ .

Kata kunci: nitrit, asam 4-aminobenzoat, N-(1-naftil) etilendiamin dihidroklorida (NEDA), validasi

**DEVELOPMENT OF NITRITE ANALYTICAL METHOD  
IN FERMENTED PROCESSED VEGETABLE PRODUCT  
BY UV-VIS SPECTROPHOTOMETRY**

Ayu Pratiwi Muyasyaroh  
11/317002/PA/14120

**ABSTRACT**

The development of nitrite analytical method in fermented processed vegetable product using 4-aminobenzoic acid and N-(1-Naphtyl) ethylenediamine dihydrochloride (NEDA) by UV-Vis spectrophotometry has been studied. The analysis was carried out by reacting  $\text{NO}_2^-$  ion with 4-aminobenzoic acid as the source of amine to form benzenediazonium ion which was coupled with NEDA to form purplish red azo compound.

The optimization of wavelength, time of reaction of azo compound, the concentration of acid and mole ratio were determined. It was validated based on various validity parameters that include linearity, sensitivity, limit of detection, limit of quantification, precision, and accuracy. The validated method was applied for determination of nitrite in fermented processed vegetable product.

The azo compound had  $\lambda_{\text{max}}$  of 548 nm and molar absorptivity of  $4.9334 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1}$ . The Limit of Detection (LOD) and Limit of Quantification (LOQ) of the proposed method were 0.00893 mg/L and 0.0271 mg/L respectively with %RSD was 1.21% and the percent recovery of analysis was 92 – 97%. The concentration of nitrite in fermented processed vegetable product was  $2.506 \pm 0.0036 \text{ mg/kg}$ .

Keyword: nitrite, 4-aminobenzoic acid, N-(1-Naphtyl) ethylenediamine dihydrochloride (NEDA), validation