INTISARI

VALIDASI METODE ANALISIS BORON PADA SAMPEL KERUPUK SECARA SPEKTROFOTOMETRI UV-VIS DAN ICP-OES

Oleh

Ariffah Nuur Uswatun Hasanah
16/403600/PPA/05117

Analisis boron dalam sampel kerupuk secara spektrofotometri UV-Vis dan ICP-OES telah dilakukan dan divalidasi menggunakan *Standard Reference Material* (SRM) daun tomat Nomor SRM 1573a. Boron dalam sampel direaksikan dengan etanol membentuk etil borat dan didistilasi pada suhu kamar. Etil borat yang terbentuk direaksikan dengan kurkumin dan dianalisis secara spektrofotometri UV-Vis pada 535 nm. Kurva standar linier spektrofotometri UV-Vis pada rentang 1-5 ppm dengan koefisien korelasi (R^2) sebesar 0,9985. Limit deteksi, limit kuantifikasi dan persen perolehan kembali, masing-masing sebesar 0,002 ppm, 0,006 ppm, dan 88,71%. Pada metode ICP-OES, boron didestruksi basah menggunakan asam nitrat pekat dan H_2O_2 dan emisi diamati pada panjang gelombang 249,773 nm. Kurva standar linier ICP-OES pada rentang 1-5 ppm, koefisien korelasi sebesar 0,9998. Limit deteksi, limit kuantifikasi dan persen perolehan kembali masing-masing 0,39 ppm, 1,28 ppm, dan 77,31%. Metode spektrofotometri UV-Vis dan ICP-OES telah diaplikasikan untuk analisis boron dalam kerupuk. Metode spektrofotometri UV-Vis memberikan persen perolehan kembali yang lebih baik daripada ICP-OES.

Kata kunci: boron, distilasi, destruksi asam, spektrofotometri UV-Vis, ICP-OES

ABSTRACT

METHOD VALIDATION OF BORON ANALYSIS IN CRACKERS BY UV-VIS SPECTROPHOTOMETRY AND ICP-OES

By

Ariffah Nuur Uswatun Hasanah
16/403600/PPA/05117

Boron analysis in cracker samples by UV-Vis spectrophotometry and ICP-OES was carried out and validated using Standard Reference Material (SRM) tomato leaves SRM Number 1573a. Boron in the sample was reacted with ethanol to form ethyl borate and distilled at room temperature. The ethyl borate formed was reacted with curcumin and analyzed by UV-Vis spectrophotometry at 535 nm. Linear standard curve of UV-Vis spectrophotometry was in the range of 1-5 ppm with a correlation coefficient (R^2) of 0.9985. Limit of detection, limit of quantification and percent recovery were 0.002 ppm, 0.006 ppm, and 88.71%, respectively. In the ICP-OES method, boron was dissolved in concentrated nitric acid and H_2O_2 and emission was observed at wavelength 249 nm. ICP-OES linear standard curve was in the range of 1-5 ppm with correlation coefficient of 0.9998. Limit of detection, limit of quantification and percent recovery are 0.39 ppm, 1.28 ppm and 77.31%, respectively. UV-Vis and ICP-OES spectrophotometry methods have been applied for the analysis of boron in crackers. The UV-Vis spectrophotometry method gave better percent recovery than ICP-OES.

Keywords: boron, distillation, acid destruction, spectrophotometry UV-Vis, ICP-OES