

**ANALYSIS OF BETA CAROTENE (CAROTENOID) IN  
DARK GREEN VEGETABLES USING SOLID PHASE  
EXTRACTION (SPE) AND HIGH PERFORMANCE LIQUID  
CHROMATOGRAPHY - DIODE ARRAY DETECTOR  
(HPLC-DAD)**

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## ABSTRACT

### ANALYSIS OF BETA CAROTENE (CAROTENOID) IN DARK GREEN VEGETABLES USING SOLID PHASE EXTRACTION (SPE) AND HIGH PERFORMANCE LIQUID CHROMATOGRAPHY – DIODE ARRAY DETECTOR (HPLC-DAD)

A method for the quantification of beta carotene (carotenoid) in different dark green vegetables by using the solid phase extraction (SPE) and high performance liquid chromatography – diode array detector (HPLC-DAD) was developed. This analysis was done on the dark green vegetable species namely *Spinaciaoleracea* (*Amaranthacea Group*) ‘spinach’, *Brassica oleracea (Italica Group)* ‘broccoli’ and *Brassica rapa spp. Chinensis (Brassicaceae Group)* ‘pak choi’. Firstly, each sample was homogenized with acetone and the extract was filtered before the cleaning up process using SPE. The C18 SPE cartridge with bonded silica as the sorbent was used and it was conditioned with methanol prior to use. Polar solvent, 10% aqueous ethanol was used to remove the interferences in the sample matrix followed by nonpolar solvent, dichloromethane for the elution of beta carotene (analyte) from the cartridge. The analysis of beta carotene was done using HPLC-DAD equipped with RP-C18 column with the injection volume of 20  $\mu$ L, flow rate of 2.0 mL/min and visible detection at wavelength of 452 nm. Pak choi had the highest amount of beta carotene  $171.39 \pm 20.45$  mg/kg followed by spinach  $146.34 \pm 25.08$  mg/kg and lastly broccoli  $22.38 \pm 0.70$  mg/kg.