Leafy Nutrients: Analyzing Iron Content in Spinach through Spectrophotometry

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Abstract: *This research paper focuses on determine the iron content in spinach leaves utilizing spectrophotometry, a widely used analytical technique known for its precision and efficiency. Iron is a crucial micronutrient that is integral to various metabolic processes, and its deficiency poses serious health risks. Fresh spinach samples were collected, cleaned, and subjected to a rigorous extraction process involving acid digestion to liberate iron ions from the plant material. Following treatment, the iron concentration in the sample was analyzed through spectrophotometry, where absorbance measurements were taken at specific wavelengths corresponding to the iron complexes formed. Calibration curves were constructed using standard solutions of known iron concentrations to ensure accurate quantification. The findings indicated the iron content in spinach samples, which were then compared to dietary recommendations, demonstrating spinach's nutritional value as a significant source of iron. This research highlights the effectiveness of spectrophotometric methods in the nutritional analysis of food products, contributing valuable insights into the dietary importance of leafy greens.*

Keywords: Iron content analysis, spinach nutrition, spectrophotometry, leafy greens minerals, iron quantification, food chemistry