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## Does the modified atmosphere packaging (MAP) extend quality of baby spinach leaves on postharvest shelf life?

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Modified atmosphere packaging (MAP) has increasingly deployed for its efficiency in retarding the respiration rate and maintaining the quality of fresh produce during postharvest storage. Improperly modified atmospheric environment may negatively impact the quality of produce during postharvest storage. Thus, the selection of suitable and appropriate packaging materials is critical in creating an ideal environment for prolonging the shelf life of fresh-cut vegetables. The influence of MAP on the quality of baby spinach during postharvest storage is assessed in this study. Parameters recorded are antioxidant activity and flavonoids. Grown baby spinach were harvested after 37 days of planting. Equally set of baby spinach leaves were stored under controlled atmosphere (5% O<sub>2</sub>; 15% CO<sub>2</sub>; balance N<sub>2</sub>) and control (78% N<sub>2</sub>; 21% O<sub>2</sub>), at 4°C, 10°C and 20°C for 12 days. The results of this study demonstrated that the total antioxidant activity in the baby spinach leaves stored under controlled atmosphere at 4°C after 3 and 12 days of storage period significantly yielded 6.39 mg.g<sup>-1</sup> and 4.41 mg.g<sup>-1</sup>, respectively. Whereas, the lowest total antioxidant activity after 3 days (3.65 mg.g<sup>-1</sup>) and 12 days (2 mg.g<sup>-1</sup>) was observed at 20°C in baby spinach leaves stored in normal air atmosphere. Similar trend was evident on flavonoids, under controlled atmosphere at 4°C yielding 25.14 mg.g<sup>-1</sup> and 9.15 mg.g<sup>-1</sup> after 3 and 12 days, respectively. Samples from normal air showed least flavonoid contents when stored at 20°C yielded 5 mg.g<sup>-1</sup> for 12 days. In conclusion, when considering all conditions under which this study was carried out, it is therefore, evident that baby spinach leaves should be stored under controlled atmosphere (5% O<sub>2</sub>; 15% CO<sub>2</sub>; balance N<sub>2</sub>) at 4°C for 9 days to maintain high level of antioxidant activity and flavonoids. Thus, leading to the best quality and also extend the shelf life of the product.

### Biography

Mudau A R is on the final phase of his Master's degree at the College of Agriculture and Environmental Sciences, University of South Africa. He has recently published a scientific paper with *HortTechnology* journal based on the findings he presented in the 4<sup>th</sup> International Conference on Agriculture and Horticulture held in Beijing, China.

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