RETASTE Conference Abstracts
Vol. 3 RETASTE-PLW-384-Oral
Athens, Greece, 27-29 September, 2023

rethink food resources, losses, and waste 2023 retaste

Avocado shelf-life extension using edible active coatings containing 4-hexylresorcinol and sodium metabisulphite

[1]Essam Hebishy and [2]Ayten Aylin Tas

[1]*Centre of Excellence in Agri-food Technologies, National Centre for Food Manufacturing, College of Sciences, University of Lincoln, Holbeach, Spalding, PE12 7FJ, United Kingdom*
[2]*Department of Health Professions, Faculty of Health and Education, Manchester Metropolitan University, Manchester M15 6BG, United Kingdom*

Abstract

Food waste is a serious environmental and economic challenge worldwide. A total of 2.2 billion tonnes of municipal solid waste per year is expected by 2025. Food packaging is vital in protecting food products from damage and deterioration and helps retain the quality and extend shelf-life. Non-biodegradable packaging has been shown to have serious environmental drawbacks. The current study aimed at developing a new active packaging with antioxidant potential to extend the shelf life of *Hass* avocados, a short shelf-life fresh produce that poses problems in the food supply chain, including economic losses due to food waste. 4-hexylresorcinol (4-HR, 250 and 500 mg/L) and sodium metabisulphite (SMBS, 1250 and 2500 mg/L), dissolved in water (labelled as additive-only samples) or in sodium alginate film solution (10 g/L) (alginate-coated samples) were used as a coating for ready-to-eat avocados procured from a local supplier in Lincolnshire, UK. The avocados were stored for 10 days at 25 ± 1°C and 60% RH and sampled after 1, 5 and 10 days of storage for weight loss determination, total soluble solids (TSS) content, pH, firmness and bioyield point (BYP), internal and external colour and appearance, lipid oxidation, chlorophyll content and microbial load. Samples coated with alginate lost less weight and soluble solids. While firmness remained similar for all samples from day 1 to 10, regardless of the coating used, the bioyield point (BYP) was retained in additive-only samples. Samples coated with alginate antioxidant packaging had a better internal and external appearance and colour stability than additive-only samples. The results showed that the samples treated with alginate coatings were less prone to oxidation when compared to untreated control samples. In addition, alginate antioxidant coatings had some effect on delayed chlorophyll degradation and a slight reduction in mould and yeast counts. Alginate-based antioxidant coatings can be a promising sustainable alternative for maintaining avocado quality during storage.

Keywords: Avocado, Alginate, Edible packaging, Shelf-life, Antioxidant