Effect of ozone and antimicrobial treatments on the shelf life of cauliflower under modified atmosphere packaging

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Abstract

The study focuses on development of modified atmosphere packaging for fresh-cut minimally processed cauliflower to increase its shelf-life and enhancing the on-farm value addition by utilizing perforated packaging films along with pretreatments with ozonated water and antimicrobials. The samples were treated with ozonated water, oregano essential oil (antimicrobial), and cinnamon essential oil (antimicrobial). Based on preliminary treatments, the number of perforations made by specially prepared tool was kept as 6 and 12, which represented 5.1×10^{-5} and 1.02×10^{-4}% of the total surface area of packages. These perforated packaged samples were stored in cold room at 4 °C temperature for 28 days. The shelf life and quality of treated cauliflower samples were compared with untreated samples. The quality analysis of the samples was carried up to 28 days at 7 days intervals based on their weight loss, headspace gas composition, texture, pH, total soluble solids, ascorbic acid, total phenolics, total microbial count, and sensory characteristics. The quality analysis revealed that ozonated water-treated samples at 12 perforations and stored at 4 °C for 28 days were most efficient in keeping it fresh without any significant reduction in quality as compared to the cauliflower stored for one week at normal conditions.