

ABSTRACT

Tomato (*Solanum Lycopersicum* L.) is a climacteric horticultural commodity with a relatively short shelf life due to continuous respiration and transpiration after harvest. This study aimed to determine the effect of *Chitosan edible coating* and polyethylene packaging on maintaining tomato freshness during storage at room temperature. The research was conducted at the Laboratory of Agricultural Industrial Technology, Faculty of Agriculture, Universitas Malikussaleh, from December 2025 to January 2026 using a two-factor Randomized Complete Block Design (RCBD) with three replications. The first factor was *Chitosan* concentration consisting of 0% (K0), 2.5% (K1), and 3.5% (K2), while the second factor was polyethylene packaging, consisting of without packaging (P0) and with polyethylene packaging (P1). The observed parameters included weight loss, fruit color, moisture content, total soluble solids (TSS), vitamin C content, pH, and shelf life. The results showed that *Chitosan* significantly affected total soluble solids at 15 days after application (DAA) and pH at 7 DAA. Polyethylene packaging significantly affected total soluble solids at 11 DAA, vitamin C content at 5, 11 and 13 DAA. The interaction between both treatments significantly affected vitamin C content only at 11 and 13 DAA. The combination of *Chitosan* coating and polyethylene packaging shortened the shelf life to 13 days, whereas the single treatments maintained fruit quality for up to 23 days. Based on the findings, the application of 2.5% *Chitosan* without polyethylene packaging and polyethylene packaging without coating were more effective in maintaining tomato quality during storage at room temperature.

Keywords: fruit quality, postharvest, respiration, storage, shelf life.