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## Essential Oils: New Preservative for Mushroom Packaging

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### Abstract

The effect of various essential oils, viz. lime, cumin, tarragon, thyme and anise on the shelf life of mushrooms was studied during storage period. Mushrooms treated indirectly with pieces of filter paper consist of essential oils which disperse the volatiles oil vapour in the package. The mushrooms were stored under modified atmosphere packaging (MAP) conditions with  $4\pm 0.5^{\circ}\text{C}$  and  $80\pm 5\%$  relative humidity (RH). Morphological and physiological changes were estimated every 2 days. All treatments significantly affected the quality of packaged mushrooms ( $p < 0.01$ ). Applications of volatiles oil delayed discolouration associated with reduced phenolic compounds. Higher contents of total soluble solids (TSS), total acidity and TSS/T acid ratio of fresh-cut mushroom was observed in treated packaging. The best result for the quality criteria were obtained from the lime and tarragon treatment whereas cumin was found more effective to controls decay compared with the other treatments in MAP. The result showed that essential oils inhibited the growth of total bacteria, yeasts and moulds counts. Thyme and cumin extract was more effective to control decay. Although cumin extract exhibited off odor after opening the pack. Moreover it was determined that the mushrooms could be stored successfully for 4 weeks in MAP. Control had a greater incidence of discolouration and minimum storage life. Results from the present work suggest that Passive MAP with indirect essential oils treatment and storage at  $4^{\circ}\text{C}$  can be used successfully for extending the shelf-life of the mushrooms for more than 25 days. Shelf life of mushrooms through the application of tarragon under passive MAP condition was improved about 30 days.

**Keywords:** Decay, essential oil, MAP, mushroom