**Optimization of the shelf- life of fresh cut mushrooms depending on Essential oils variability**

Fataneh Yari and Bahram Tafaghodinia

Agricultural Research Institute, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran

**Abstract:**

Mushrooms mainly are susceptible to physical damages, considering no cuticle to protect them. Further high respiration rate reduce their postharvest shelf-life to 3–4 days. To investigate the mushrooms shelf-life, over 25 packed fresh cut mushrooms were exposure to four essential oils (Lime, savory, thyme and tarragon) and three different levels (0, 500 and 1000µll-1). The effect of essential oils and the storability on the kinetics of quality relevant parameters of the packed was studied by measuring TSS, weight loss phenolic compounds, cap opening, and color, fresh and dry weight of the mushroom. The significant antimicrobial and antioxidant activities of all oils suggest that it could introduce as a new source of bio-compounds with preservative phenomenon. Optimal essential oils concentration point to a practice of low level of cumin essential oil to preserve quality attributes, although other properties can be optimally preserved using tarragon essential oils and therefore pointing to possible marketability savings in storage time. Significant essential oil- to- packing and essential oils variability components were identified (p≤0.05), giving an estimate of the variability expected on the optimization of different quality attributes of such a perishable product in a consumer retail scenario. Lime, anise, thyme and cumin essential oil did not show enough antioxidant properties to inhibit the off-odor of mushrooms and/or extending their shelf-life in compare with tarragon. Tarragon showed the best antioxidant properties. The compounds responsible for the organoleptic and antioxidant properties and predicting the shelf- life based on thresholds of marketability are analyzed and discussed. The response variables were taken for optimization model in order of priority are essential oils concentration (EoC) shelf life (ShL), weight loss ratio (WR), cap opening (CP) and visual color (VC).

**Key Words**: mushrooms, essential oils, marketability, shelf life