

## **Total quality index of commercial oyster mushroom *Pleurotus sapidus* in modified atmosphere packaging**

### **ABSTRACT**

**Purpose**–The purpose of this paper is to identify the strain of oyster mushroom (OM) *Pleurotus sapidus* cultivated in a local (commercial) farm, and to generate a total quality index (TQI) on the strain using different modified atmosphere packaging (MAP) gas mixtures. **Design/methodology/approach**–A phylogenetic tree was constructed using the MEGA software to identify the specific strain of *P. sapidus* grown in a local farm. The effects of MAP on fresh fruiting bodies of the identified strain were determined under three conditions: high carbon dioxide packaging (HCP: 20 per cent CO<sub>2</sub>, 15 per cent O<sub>2</sub>), low carbon dioxide packaging (LCP: 2 per cent CO<sub>2</sub>, 30 per cent O<sub>2</sub>) and high nitrogen packaging (HNP: 85 per cent N<sub>2</sub>, 15 per cent O<sub>2</sub>). All samples were stored at 4°C for up to ten days, and subjected to total phenolic content (TPC), colour retention (CR) and sensory analysis. Quality parameters such as chewiness and odour were used to obtain the TQI. **Findings**–From the phylogenetic analysis, a new strain (*P. sapidus* strain QDR) with 99 per cent similarity to *P. sapidus* was identified. Among the three MAP treatments, HCP recorded the highest TPC (2.85 mg GAE/g) and CR (60.36) after ten days, although only its CR was significantly different ( $p < 0.05$ ) from the control. Feedback from 30 sensory panellists indicated that both HCP and LCP were generally more effective in retaining the colour–odour of OM. The optimum TQI for HCP was obtained based on the observed parameters, which is useful for the large-scale packaging of OM. **Originality/value**–Scientific evidence has revealed that packaging trend for commercially grown OM affects consumer’s acceptance.

**Keyword:** Modified atmosphere packaging; Oyster mushroom; Phylogenetic analysis; *Pleurotus sapidus*; Total quality index