

## Effect of Laser Ablation OTR Films on the Storability of Endive and Pak Choi by Baby Vegetables in Modified Atmosphere Condition

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**Abstract :** As the consumption trends of vegetables become different from the past, it is increased using vegetable more convenience such as fresh-cut vegetables, sprouts, baby vegetables rather than an existing whole piece of vegetables. Selected baby vegetables have various functional materials but they have short shelf life. This study was conducted to improve storability by using suitable laser ablation OTR (oxygen transmission rate) films. Baby vegetable of endive (*Cichorium endivia* L.) and pak choi (*Brassica rapa chinensis*) for this research, around 10 cm height, cultivated in glass greenhouse during 3 weeks. Harvested endive and pak choi were stored at 8 °C for 5 days and were packed by PP (Polypropylene) container and covered different types of laser ablation OTR film (DaeRyung Co., Ltd.) such as 1,300 cc, 10,000 cc, 20,000 cc, 40,000 cc /m<sup>2</sup>•day•atm, and control (perforated film) with heat sealing machine (SC200-IP, Kumkang, Korea). All the samples conducted 5 times replication. Statistical analysis was carried out using a Microsoft Excel 2010 program and results were expressed as standard deviations. The fresh weight loss rate of both baby vegetables were less than 0.3 % in treated films as maximum weight loss rate. On the other hands, control in the final storage day had around 3.0 % weight loss rate and it followed decreasing quantity. Endive had less 2.0 % carbon dioxide contents as maximum contents in 20,000 cc and 40,000 cc. Oxygen contents was maintained between 17 and 20 % in endive, 19 and 20 % in pak choi. Ethylene concentration of both vegetables maintained little lower contents in 20,000 cc treatments than others at final storage day without statistical significance. In the case of hardness, 40,000 cc film was shown little higher value at both baby vegetables without statistical significance. Visual quality was good at 10,000 cc and 20,000 cc in endive and pak choi, and off-flavor was not appeared any off-flavor in both vegetables. Chlorophyll (SPAD-502, Minolta, Japan) value of endive was shown as similar result with initial in all treatments except 20,000 cc as little lower. And chlorophyll value of pak choi decreased in all treatments compared with initial value but was not shown significantly difference each other. Color of leaves (CR-400, Minolta, Japan) changed significantly in 40,000 cc at endive. In an event of pak choi, all the treatments started yellowing by increasing hunter b value, among them control increased substantially. As above the result, 10,000 cc film was most reasonable packaging film for storing at endive and 20,000 cc at pak choi with good quality.

**Keywords :** carbon dioxide, shelf-life, visual quality, pak choi

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