

Effect of Laser Ablation OTR Films on the Storability of Handaeri - gomchwi (Ligularia fischeri var. spiciformis Nakai) Jangajji in MA (Modified Atmosphere) Storage

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Abstract : Gomchwi (*Ligularia fischeri*) is grown in the wetland of the deep mountains in Korea and East Asia and has properties that are, inflammation control, whitening, antimutagenic and antigenotoxic. Jangajji is a type of pickle in Korean fermented food which is made by pickling or marinating vegetables in a sauce, such as soy sauce, chili pepper paste, soybean paste, or diluted vinegar for a long period of time. Handaeri-gomchwi jangajji is generally packed a film that has very low or no gas permeability in the Korean domestic market, so packages have a risk of swelling or bursting as a result of internal gas generation during storage or sale This study was conducted to improve secure distribution of Handaeri-gomchwi (*Ligularia fischeri* var. *spiciformis* Nakai) Jangajji using laser ablation OTR (oxygen transmission rate) films. Handaeri-gomchwi cultivated in Yangu, Gangwon province, Republic of Korea (*Ligularia fischeri* var. *spiciformis* Nakai) was processed in to Jangajji using soy sauce. They were packed by different OTR films, and were stored for 90 days in 7°C(10,000 cc, 20,000 cc, 40,000 cc and 80,000 cc O₂/m²• day • atm), 20 days in 20°C (10,000 cc, 30,000 cc, 70,000 cc and 100,000 cc) and compared with the control film(PP film, 1,300cc). The fresh weight loss, carbon dioxide, oxygen, and ethylene concentrations of Handaeri-gomchwi packages were measured during storage. On the final day of storage, incidence rate of fungi, pH, salinity, firmness, and off-flavor were measured. The fresh weight loss rate of Handaeri-gomchwi was less than 2.0% in 10,000cc OTR films at two different storage periods and temperatures. At 80,000cc(7°C) and 100,000cc(20°C), carbon dioxide contents were 2.0% and 6.4% respectively, whereas the control treatment had the highest concentration. Which was 35%(20°C) and 15%(7°C) , that resulted the packages to swell during storage. The control treatment Showed the lowest oxygen concentration at 2.5% in 7°C and 0.8% in 20°C. Packages in 7°C (0.3-1.7µL/L) showed very lower ethylene concentration than in 20°C(10-25µL/L), they also had no significant relation. On the final storage day, fungi were found in every film at both temperatures, except the 10,000cc, as oxygen permeability increased so did the pH, while the salinity decreased. Firmness and off-flavor Showed the best results at 10,000cc in both temperatures best result at 10,000cc in both temperature. Following the results, 10,000cc film is the most reasonable treat in storing Handaeri-gomchwi. For it had a suitable oxygen transmission rate, which prevents billowing, and maintained good qualities in both temperatures.

Keywords : carbon dioxide, Korean pickle, marketable, oxygen

Conference Title : ICAE 2014 : International Conference on Agricultural Engineering

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : August 25-26, 2014