PREPARATION OF BARLEY BRAN PROTEIN COMPOSITE FILM AND ITS APPLICATION IN FOOD PACKAGING

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Protein films have been studied for use as edible films, but they are limited due to poor mechanical properties and high cost. As a typical protein film, gelatin film has relatively good physical properties, but its cost is higher than that of plastic films. Therefore, a less expensive protein source for the preparation of protein film is needed. For this purpose, barley bran (BB) can be used as a protein source due to its low cost. Therefore, the objectives of this study were to prepare the BB-gelatin composite (BG) film and to apply the film in the packing of salmon to prevent microbial growth and lipid oxidation during storage. The optimal condition for the preparation of the BG film was determined to be 3 g barley bran protein, 3 g gelatin, and 1 g sorbitol in 100 mL film-forming solution. In order to inhibit the growth of pathogenic bacteria, a BG film containing 1% grapefruit seed extract (GSE) was prepared. After 15 days of storage, the populations of Escherichia coli O157:H7 and Listeria monocytogenes inoculated on salmon packaged with the BG film containing GSE decreased by 0.53 and 0.50 log CFU/g, respectively, compared to the control. In addition, packing salmon with the BG film containing 1% GSE decreased the peroxide value and thiobarbituric acid value during storage. These results indicate that the BG film containing GSE can be used as an antibacterial and antioxidant packaging film for processed foods.