

Recovery of Food Waste: Production of Dog Food

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Abstract : The population of the world is approximately 7.6 billion, and it increases uncontrollably and irrepressibly, leading to an increase in consumption. This situation causes crucial problems, and food waste is one of these. Wasting food endangers natural resources and causes hunger. For instance, excessive amounts of food waste cause greenhouse gas emissions, contributing to global warming. Therefore, waste management has been gaining significance in the last few decades at both local and global levels due to the expected scarcity of resources for the increasing population of the world. There are several ways to recover food waste. Bioethanol, biodiesel, biogas, agricultural fertilizer and animal feed can be obtained from food waste that is generated by different food industries. In this project, feeding animals was selected as a food waste recovery method and food waste of a plant was used to provide ingredient uniformity. Grasshoppers were used as a protein source. In other words, the project was performed to develop a dog food product by recovering the plant's food waste after following some steps. The collected food waste and purchased grasshoppers were sterilized, dried, and pulverized. Then, they were all mixed with 60 g agar-agar solution (4%w/v). 3 different aromas were added separately to the samples to enhance flavor quality. Since there are differences in the required amounts of different species of dogs, fulfilling all nutritional needs is one of the problems. In other words, there is a wide range of nutritional needs in terms of carbohydrates, protein, fat, sodium, calcium and so on. Furthermore, the requirements differ depending on age, gender, weight, height and species. Therefore, the product that was developed contains average amounts of each substance to not cause any deficiency or surplus. On the other hand, it contains more protein than similar products in the market. The product was evaluated in terms of contamination and nutritional content. For contamination risk, detection of *E. coli* and *Salmonella* experiments were performed, and the results were negative. For the nutritional value test, protein content analysis was done. The protein contents of different samples vary between 33.68% and 26.07%. In addition, water activity analysis was performed, and the water activity (aw) values of different samples ranged between 0.2456 and 0.4145.

Keywords : food waste, dog food, animal nutrition, food waste recovery

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