

# Application of volcanic ash drying to game meat

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**Objectives:** Ash drying is a type of aging and drying processing method that utilizes volcanic ash. Highgrade dried fish using this method are also sold and are often used for marine fish. After the evacuation of the entire island due to the Miyakejima eruption disaster in September 2000, it was tackled as a local product as a study for fisheries-related reconstruction from the return island in February 2005. At that time, after being consulted about the possibility of ash-drying methods, researchers are studying not only seafood but also vegetables, fruits, and meat. In this study, we focused on the venison and wild boar meat of game meat, and focused on the examination of processed cooked products.

**Materials and Methods:** 1) Venison (Kyoto, Hokkaido) and wild boar meat (Kyoto) were used as game samples. The parts were fins, peaches, and loin, and 40 items of processed cooked products were examined. The volcanic ash used for ash drying was Miyakejima volcanic ash approved by the Miyake branch office of the Environment Agency. 2) The method of ash drying was based on the processing method used in Miyakejima. Before the volcanic ash treatment process, the concentration of salt solution in which the ingredients were pre-treated and soaked was examined between 2 and 7%. 3) Considering the return of research results to Miyakejima, the process was carried out at a refrigerated temperature of 7 °C or less (average measured value is 5 to 7 °C) in terms of the facilities and equipment currently installed at the site. Therefore, from the viewpoint of food hygiene, the maximum time from the acquisition time including meat processing (including thawing time in the case of frozen meat) to the final process is set to 5 days or less. 4) In anticipation of sensory evaluation, as a comparison and control of prototypes using venison and wild boar meat, the same processed products using beef and pork were also prepared and compared with ash-dried untreated and ash-dried treated samples. In the prototype using ground meat, three conditions were prepared: venison ground meat, wild boar meat ground meat, and combined ground meat of venison and wild boar meat. In addition to the above-mentioned three types of ground meat, four types of meat sauce using a combination of beef and pork were prepared, and 25 women in their twenties were subjected to sensory evaluation using the scoring method. We also considered retorting meat sauce.

**Results and Discussion:** Due to the difference in the concentration of the salt solution soaked in meat before the process of using volcanic ash, the degree of odor removal and the texture after drying the ash changed. The 4% ash-dried wild boar meat loin, which was the optimum condition in this study, had the same peculiar odor as pork loin, and after baking, it had a roast ham-like flavor and texture. The ratio of fat and lean meat suitable for drying ash in meat was highly evaluated ( $P < 0.01$ ) in terms of texture and flavor when the ratio of lean meat was high. In the ash-dried untreated sample, the spices that have aromatizing and deodorizing effects also have other characteristics such as bringing out the taste of meat and a unique scent. Especially, the compatibility between venison and nutmeg was bad. No significant difference was observed in the appearance, texture, and aroma in the sensory evaluation results of the meat sauce using the ash-dried untreated and ash-dried samples. Therefore, it is judged that there is no difference from the meat sauce using the combined grinding of beef and pork, and we think that it is a cooking method that is easy for everyone to accept. In addition, the meaty taste of venison and wild boar meat ground meat was preferred. Furthermore, in the comprehensive evaluation, meat sauce using only ground wild boar meat and meat sauce using only ground venison, and meat sauce using ground wild boar meat and venison are significantly better than meat sauce using ground beef and pork. It was shown ( $P < 0.05$ ). It is thought that this is more suitable for the taste of meat sauce, which is characterized by the strong acidity and strong flavor of tomatoes, when venison or wild boar meat, which has a stronger flesh than ground beef and pork, is used. Of the four types of meat sauces that were prototyped, the one using venison and wild boar meat ground meat was the most preferred, so as a result of processing it into a retort food, the flavor did not change and there was no odor. In the future, it will be necessary to retort pre-cooked products with the minimum pretreatment of raw materials.

**Key words:** Volcanic ash, Game meat, Venison, Brawn, Processing