

#### P6-39

##### Microbiological Characterization in Alaska Pollack *Sikhae* during Aging at Low Temperature

Eun-Jeong Jeong\*, Hun Kim, Young-Mi Lee and Yong-Jun Cha.

Department of Food and Nutrition, Changwon National University

As one of researches for extension of shelf-life in *Sikhae*, microbiological characterizations including lactic acid producing bacteria in Alaska pollack *Sikhae* were evaluated during aging at low temperature conditions. Here, Alaska pollack *Sikhae* were fermented with 3 types, e.g. C type, stored at 5°C after 6 days aging at 20°C; A1 type, stored at -2°C after 6 days aging at 20°C; and A2 type, stored -2°C after two stage aging followed by 6 days at 20°C and 7 days at 5°C in that order. The viable cell count in C was in the range of  $3.16 \times 10^8$  -  $4.18 \times 10^8$  CFU/g for 56 days of aging, and decreased to  $2.61 \times 10^7$  CFU/g in 79 days. However, the number in A1 decreased from  $2.65 \times 10^8$  CFU/g to  $4.16 \times 10^7$  CFU/g after keeping at -2°C and the number in A2 was also varied from  $9.33 \times 10^7$  to  $2.50 \times 10^8$  CFU/g after alternating temperature to -2°C. In C type, *Lactobacillus sp.* was kept in  $1.26 \times 10^8$  -  $2.76 \times 10^8$  CFU/g ranges for 56 days, and then decreased to  $2.20 \times 10^7$  CFU/g in 79 days. The concentration of *Lactobacillus sp.* in A1 decreased from  $2.22 \times 10^8$  CFU/g to  $2.68 \times 10^7$  CFU/g at aging condition of -2°C. But those in A2 decreased to  $1.17 \times 10^8$  CFU/g after 25 days of aging. *Leuconostoc sp.* increased up to  $1.50 \times 10^7$  CFU/g in C for 14 days and then disappeared afterward. Meanwhile, *Leuconostoc sp.* in A1 decreased gradually to  $5.90 \times 10^5$  CFU/g at -2°C of aging, whereas those in A2 was the range of  $9.60 \times 10^5$  -  $2.25 \times 10^6$  CFU/g after two stage aging. The level of *Pediococcus sp.* in A2 was still maintained  $10^7$  CFU/g in 79 days after two stage aging, comparing with  $2.50 \times 10^5$  CFU/g in C and  $6.13 \times 10^6$  CFU/g in A2. *Aerococcous sp.* increased to  $1.26 \times 10^8$  CFU/g in 7 days of C and  $1.51 \times 10^8$  CFU/g in 14 days of A1, respectively, and then decreased in two samples. The same tendency appeared in *Streptococcus sp.* in all samples. *Yeast* was the level of  $10^7$  -  $10^8$  CFU/g in C during aging, while those in A1 and A2 were maintained the level of  $10^7$  -  $10^8$  CFU/g in early stage of 38 and 56 days, respectively.

#### P6-40

##### Extension of Shelf-Life of Alaska Pollack *Sikhae* by Two Stages Aging

Eun-Jeong Jeong\*, Woo-Jin Cho, Hun Kim and Yong-Jun Cha.

Department of Food and Nutrition, Changwon National University

Alaska pollack *Sikhae* were stored with 3 types, e.g. C type, stored at 5°C after 6 days aging at 20°C; A1 type, stored at -2°C after 6 days aging at 20°C; and A2 type, stored -2°C after two stage aging followed by 6 days at 20°C and 7 days at 5°C in that order. The chemical properties including VBN, Amino-N, pH, total acidity and sensory evaluation in 3 types *Sikhae* were experimented during fermentation. VBN values (mg%) in all samples (C, A1 and A2) increased from 18.68 mg% in 0 day to 73.56 mg%, 52.43 mg% and 55.00 mg% after 79 days of aging, respectively. Amino-N values (mg%) in C, A1 and A2 were also 255.64 mg%, 167.32 mg% and 200.17 mg%, respectively, in 79 day of aging. The pH of C decreased sharply (from 6.13 to 4.18) up to 14 days of aging and then kept in 4.18 - 4.05 ranges. However, pH in A1 (4.94-4.55 ranges) and A2 (4.42-4.27 ranges) were more higher than that in C (from 4.18 to 4.05) during the storage of alternated temperature to -2°C. Total acidity values gradually increased in 3 types *Sikhae* with aging days. However, the increasing ranges of total acidity in A1 (from 0.94 g% to 1.40 g%) and A2 (from 1.65 g% to 1.98 g%) were lower than that in C after storage of alternated temperature to -2°C. In sensory evaluation, overall acceptance of C increased from 5.67 in 7 days to 7.00 point or more for 38 days of aging and then decreased below 6.00 point gradually. However, scores of A1 and A2 maintained the ranges of 5.00-6.68 and 6.33-7.09 during 79 days of aging, respectively. The point of limit salability (6.00 or more) was preserved until 38 days in C and 79 days in A2 type. Limit salable point of A1 appeared on 14 days only. These results suggested that A2 type was superior to C and A2 from the sensory evaluation, and also extension of shelf-life of Alaska pollack *Sikhae* by two stages aging could be expected until 79 days of aging.