P4-1

Sanitation of Ingredients and Final Product by Gamma Irradiation Improve Storage Stability of *Squid Jeotkal*

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Ingredients for manufacturing a low salted (< 8%) and fermented *Squid Jeotkal* and a commercial final products were irradiated at 0, 0.5, 1.0, 2.0, and 5.0 kGy by gamma ray and stored at 4℃ for 28 days to determine quality and storage stability. *Squid Jeotkal* was manufactured in a commercial plant and the ingredients used for this study were also obtained from the plant. *Squid Jeotkal* was observed its initial contamination of total aerobic bacteria, yeast and mold, and coliform at 6.8, 4.5, and 5.0 log CFU/g, respectively. However, irradiation dose at 1 kGy reduced the total aerobic bacteria up to 4.9 log cycle at Day 0. Yeast and mold significantly reduced after irradiation at 2 kGy during whole storage ranged 1 to 2.4 log CFU/g. Coliform was not detected within the detection limit (<10^1 CFU/mL) with any irradiation dose from day 7 to 28. Among the ingredients, red hot pepper powder showed the highest total aerobic bacteria than other ingredients, yet 5 kGy irradiation significantly reduced the number by 4.5 log cycle ($P<0.05$). Sensory evaluation showed that gamma irradiation with doses of 0.5, 1.0, 2.0, and 5.0 kGy did not adversely affect overall acceptability of Squid Jeotkal and its ingredients during cold storage for 28 days.

P4-2

Effect of Aqueous Chlorine Dioxide and Citric Acid Treatment on the Reduction of Escherichia coli for Radish Seeds and Sprouts

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The efficacy of a 2.0% citric acid and aqueous chlorine dioxide(ClO_2) treatment of radish seeds artificially contaminated with E. coli was studied. Radish seeds were inoculated with E. coli. After inoculation, samples were stored at 4℃ and dipped in citric acid or aqueous chlorine dioxide for 10 min. Treatment of radish seeds with aqueous ClO_2 solution caused 1.5 log cfu/g reductions in the number of E. coli. Dipping of radish seed in 2.0% citric acid solution for 10 min were more effective than aqueous ClO_2 treatment for reducing E. coli populations on radish seed. E. coli populations reached > 7.0 log on

sprouts grown from seeds inoculated with E. coli and then treated with chlorine (100 ppm) or 0.5% ciric aicd and followed by 25 ppm aqueous ClO_2 solution. The efficacy of spray application of chlorine (100 ppm) or 0.5% citric acid and followed by 25 ppm aqueous ClO_2 to eliminate E. coli during germination and growth of radish was investigated. Radish seed inoculated with E. coli was treated for the duration of the growth period. Spray application of 100 ppm chlorine for growth period was minimally effective resulting in decrease of population of E. coli. Treatment on each of the 4 days of growth reduced populations of E. coli. And the results indicated that combined treatment of seeds with 2.0 % citric acid and then treatment of sprouts with 0.5% ciric acid followed by 25 ppm aqueous ClO_2 during sprout growth was very effective to eliminate E. coli.

P4-3

Pre-stressed *E. coli* ATCC 10536의 저농도 ACD에 대한 감수성/저항성의 변화

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음용수 처리와 식품의 전처리용 살균소독제로서 염소계 살균소독제는 매우 광범위하게 사용되고 있다. 살균소독제의 효과는 일반적으로 culturable coliform/E. coli와 같은 특정한 미생물/미생물군을 평가하거나 모니터링하여 측정한다. 하지만 다양한 미생물들이 외부환경에 대한 스트레스 즉, heat, cold stress, acid, stress, osmotic stress, oxidative stress, starvation 등에 노출된 경우 생리적 변화가 일어나며 이러한 생리적 변화에 따라 disinfectant에 대한 감수성이나 저항성이 크게 달라진다는 사실이 밝혀지고 있다. 살균소독제의 살균소독력 평가 indicator strain인 *E. coli* ATCC 10536을 pH shift, cold shock, heat shock, acid shock, acid adaptation, hypochlorite, saline stress를 유도한 다음 저농도(≤5 ppm)의 ACD(aqueous chlorine dioxide)를 가하여 경시적인 살균효과를 비교·검토하였다. 온도는 4℃〉 10℃〉 25℃〉 36℃순으로 ACD에 대한 저항력이 급격히 증가하였으며, Lactic aicd에 의한 acid shock을 유도한 경우에 가장 급격한 감수성 증가가 확인되었으나 acid adaptation에서는 감수성/저항성의 변화가 크지 않았다. 1 ppm의 hypochlorite stress를 유도한 *E. coli*에 있어서도 유의적인 저항성의 증가가 관찰되었다. 또한 5% NaCl로 saline stress를 유도한 *E. coli*는 있어서도 감수성이 크게 증가하는 것으로 나타났다.

P4-4

ACD를 이용한 침지세정시의 Chlorine species 및 DBPs의 생성량 변화

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ACD(aqueous chlorine dioxide)는 음용수 처리와 식품의 전처리용 살균소독제로서 기존의 염소계