

4.3 mm long and the female 5.5 mm long. But any parasites were not found in the peritoneal cavity. The fine structure of *Setaria* spp. by LM and SEM enabled us to classification for each worm. Light microscopy revealed that the uteri in female were founded but the eggs were not founded in the uterus. *The Anterior Part:* The view *en face* of the head confirmed the mouth opening surrounded by the peribuccal crown for each sex examined. The head of both male and female showed uniform roundness of the buccal opening and somewhat depressed dorso- and ventro-projections of the peribuccal crown at the tips. The buccal opening was round. The lateral lips were represented by one and two summits, respectively, of the mouth opening on both dorsal sides. The amphids were laterally situated, elevated and had an dorsoventral amphidal pore at the lower bottom. *The Posterior Part:* The lateral appendages were paired in both sexes. The posterior end of female was a tapering terminus with a smooth knob. The male showed clear papillary arrangement; 3 pairs of the postcloacal papillae, a pair of the adcloacal papillae, and a central papilla just in front of the cloaca. The transverse bands composed with longitudinal microstriations.

Conclusions: In this study 2 parasites from the left eye of 3 years-old horse were morphologically identified as *S. digitata*. In general, adults of *Setaria* spp. are found in the peritoneal cavity. They can have erratic parasitism, mainly in the pleural cavity, eye, brain, spinal cord.

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P-024

Hypocholesterolemic effects of multi-lactic acid bacteria (*Lactobacillus casei* WK3, *Enterococcus faecium* WK5, *Bifidobacterium longum* WK9, and *Lactobacillus plantarum* K-1) in C57BL/6J mouse fed a high fat diet

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Introduction: The WHO has predicted that cardiovascular disease will remain the leading cause of death by 2030, affecting approximately 23.6 million people around the world. Cardiovascular diseases are the leading cause of death in the western world and it is strongly associated with hypercholesterolemia. Recent studies have reported that lactic acid bacteria have cholesterol-lowering effects *in vitro* and *in vivo*. We investigated the serum cholesterol lowering effect of *Lactobacillus casei* WK3, *Enterococcus faecium* WK5, *Bifidobacterium longum* WK9 and *Lactobacillus plantarum* K-1 in C57BL/6J mouse fed high cholesterol-diet.

Materials and Methods: To investigate the hypocholesterolemic effects of lactic acid bacteria (LAB), six-weeks old male C57BL/6J mouse was administered with WK3 (2.0×10^9 cfu/mouse), WK3 mixed with WK5, WK9, K-1 (5.0×10^8 cfu/mouse) in 200 μ l PBS and cholesterol diet for 6 weeks. The negative control group (NC) and positive control group (PC) was given 200 μ l PBS. After 6 weeks, blood biochemical and pathological analysis were carried out.

Results: In blood lipid analysis, the levels of total cholesterol and LDL-cholesterol were significantly decreased in mouse administered with multi-LAB (135.2 ± 19.18 and 50.3 ± 0.97 mg/dl, respectively) compared to positive control group (154.3 ± 15.60 and 64.1 ± 0.73 mg/dl, respectively). However, they had no effects on the serum aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels.

Conclusions: These results suggested that combined administration of LAB has a hypocholesterolemic effect. They will be used as probiotics to prevent hypercholesterolemia for human and animal health.

References

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P-025

Quantitative determination of aminopyrine in pig kidney tissues by surrogate analyte-based LC-MS/MS method

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Introduction: Aminopyrine is a drug with analgesic, anti-inflammatory, and antipyretic properties. Due to the side effect such as agranulocytosis, we should be careful when using it in food-producing animal. In addition, application of effective samples preparation process and analytical method are necessary to achieve the optimal sensitivity, selectivity and specificity for residual analysis for aminopyrine. The purpose of this study aimed to establish the analysis method of residual aminopyrine in pig kidney tissues by surrogate analyte-based LC-MS/MS.

Materials and Methods: Kidney tissues were homogenized (5g) and spiked with aminopyrine at the concentration 20 ng/g (n=3). The samples preparation process was modified with preparation process of sulphurine in meat in Korean Food Standards Codex. Concentration of 20 ng/g was chosen to evaluate the recovery. Surrogate standards were employed to generate calibration curves. Analysis was performed by Shimadzu Nexera LC interfaced to an ABSciex QTrap 6500 mass spectrometer (LC-MS/MS). The

chromatographic column was a Atlantis dC18 (2.1 mm x 100 mm, 3 μ m), the column temperature was 40°C and the flow rate was 0.4ml/min. The injection volume was 10 μ l. The mobile phase consisted of 10mM ammonium acetate in water (A) and acetonitrile (B), and the gradient was used as mentioned below: 5% B (0~2 min) - 95% B (5~7min) - 5% B (7.01 min - 10min). The source conditions were optimized to obtain three identification points (precursor: 232.1, product: 112.9, 97.1, 111.1 m/z).

Results: Concentration response showed linearity within the concentration ranges ($R^2 > 0.999$). The limit of quantification (LOQ) and detection (LOD) were resulted from the regression of the surrogate calibration curve for kidney samples. The LOD and LOQ were 0.84 and 2.56 ng/g respectively. Recoveries of aminopyrine were between 43.1%- 56.6%. The coefficient of variation (CV, n =3) observed was 14%. The surrogate standard curve was applied to reduce effects of the lower recoveries of aminopyrine analysis for pig kidney samples.

Conclusions: According to the obtained results, quantitative determination of aminopyrine with surrogate standard was successfully applied in pig kidney when the analytical recoveries were not sufficiently high. This method may be applied for the screening analyses in residues monitoring for aminopyrine in kidney tissue.

P-026

Development of Predictive Model for the Growth of *Salmonella* spp. in Liquid Whole Egg, Egg yolk, and Egg white

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Introduction: The food-borne illness by *Salmonella* in egg has recently become an issue in the United States. With the increasing demand of consumers on the safety of eggs in Korea, it was also important for us to systematically evaluate the risk of egg. Therefore, the objective of this study was to determine the risk of *Salmonella* by investigating the growth rate according to the time of various storage temperatures of the liquid whole egg, egg yolk, and egg white.

Materials and Methods: We investigated and analyzed the growth rate of each samples. Fresh eggs (< 1 day after lay) collected were prepared by liquid whole egg, egg yolk, and egg white, and 10 ml aliquots of each sample were transferred to corresponding tubes. Samples were inoculated with a mixed culture (approximately 2.0-3.0 log CFU/ml) containing equal proportions of five species of *Salmonella* (*S. bareilly*, *S. richmond*, *S. typhimurium monophasic*, *S. enteritidis* and *S. gallinarum*).

Results: After inoculating *Salmonella* onto the liquid whole

egg, liquid yolk, and liquid egg white, the effects of storage temperatures (5, 10, 15, 20, 25, 30, 35, and 40°C) on the growth of *Salmonella* mixture were investigated. Lag time decreased and specific growth rate increased with a storage temperature (10°C < 40°C) but not changed 5°C in the liquid whole egg, liquid yolk, and liquid egg white. The growth of *Salmonella* was hardly made in the egg white. A Baranyi model was fitted for each temperature growth data and corresponding maximum growth rates were estimated as primary model. Pseudo- R^2 values were greater than 0.98 for primary models. The maximum growth rates were obtained from each primary model in liquid whole egg, liquid egg yolk, and egg white and then plotted against temperature. The maximum growth rate was modeled using the modified Baranyi model for the secondary model, respectively. Combination of primary and secondary models resulted in a dynamic model whose predictions were also validated for two sinusoidal profiles.

Conclusions: The model developed in this study can be used for predicting the growth of *Salmonella* spp. in liquid egg under a variety of temperature conditions in Korea.

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P-027

Prevalence and Enumeration of *Campylobacter* at Different Steps of Broiler Slaughterhouses in South Korea

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Introduction: In this study, prevalence and enumeration of *Campylobacter* in carcasses at different steps of the broiler slaughterhouses were investigated between April and November 2012 in South Korea.

Materials and Methods: The two differently sized typical chicken processing plants accredited HACCP system was managed the critical control points for fecal contamination reduction and chlorinated water concentration (20ppm) at air chiller step and body core temperature (4.4°C) of carcasses at final storage step. Sampling was conducted at four points (anus swap of live chicken, post-evisceration/pre-washing, post washing/pre-chilling, and post chilling) in the slaughter process of whole chicken carcasses.