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Purification of molecular evolved chitosanase from *Bacillus* isolates

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A gene family shuffling was carried out with two DNA fragments including *csn* genes encoding chitosanases from isolated *Bacillus cereus* KNUC51 and *B. cereus* KNUC55. Thousands of *Escherichia coli* colonies containing shuffled products appeared on chitosan agar plates. About 200 halo-forming colonies were selected for detailed chitosanase activity assay and 5 candidates shown 2~3 fold higher activities than that of the control were chosen for the further study. The 5 candidates showed several point mutations and recombinations in the *csn* region by nucleotide sequence analysis. Using GST-fusion vector for over-expression in *E. coli*, chitosanases were purified and analyzed by SDS-PAGE. The purified Csn proteins showed chitosanase activity.

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Gyeongshingangjeehwan (GGEx) modulates Body Weights of High
Fat induced Obese Male Micro-pigs

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Objectives : We assessed anti-obesity effect of *Gyeongshingangjeehwan* (GGEx) in high fat induced obese male micro-pigs by using computerized tomography (CT).

Methods : 7 month-old micro-pigs are fed with normal (n=3) or high fat diet (n=18) for 12 weeks. The pig revealed obesity in high fat diet were divided into 2 groups (n=5 each) and vehicle (OMP) and *Gyeongshingangjeehwan* (GGEx, 616.7 mg/kg/day) were administrated for 1 month. We monitored body weight and food intake, which were compared to normal control group (NMP). After 1 month, visceral fat were measured with computerized tomography.

Results : 1. GGEx group had significantly reduced body weight gain than obese control group.

2. GGEx group revealed reduced food efficiency than obese control group with significant in statistics.

3. GGEx group had prominently reduced abdominal visceral and subcutaneous fat than obese control group.

Conclusions : In conclusion, GGEx group should have anti-obesity effect, especially in reduced visceral fat with safe.

Key Words : obese micro-pigs, feeding efficiency ratio, *Gyeongshingangjeehwan* (GGEx), CT, visceral fat