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### Evaluation for Quality and Safety Standards of the Brown Seaweed *Undaria pinnatifida*

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This research was designed to develop an evaluation technique for quality and safety standards of the brown seaweed *Undaria pinnatifida*. The materials of young and adult seaweeds were collected from Gijang and Wando in Korea. Contents of PUFAs, anti-inflammatory activity, and total carbohydrate were measured as functional criteria. Total bacteria and mold were counted for safety conditions. Amounts of a brown pigment fucoxanthin, debris, and moisture were measured to evaluate the visible status of the products. The PUFAs were ranged in 381-3476 ug/g, anti-inflammatory activity was 0.15-0.89 AU, total carbohydrate was 99-130 mg/g, total bacteria was  $4.7-270 \times 10^4$  cells/g, mold was  $1.3-9.1 \times 10^2$ , fucoxanthin was 0.4-1.5 mg/g, debris was 1.0-2.4%, and moisture was 11.4-12.6%.

**Key words:** Quality, safety, brown seaweed, *Undaria pinnatifida*

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### Cloning and Expression of the Gene Encoding Thermostable $\beta$ -Glycosidase from *Thermus thermophilus* HJ6 in *Escherichia coli*

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A gene encoding for a thermostable  $\beta$ -glycosidase, Tt $\beta$ Gly, was cloned from *Thermus thermophilus* HJ6. Tt $\beta$ Gly gene is composed of 1,296 nucleotides, encoding a protein (431 amino acids) with a predicated molecular mass of 48,676Da from *T. thermophilus* HJ6. It shares a high amino acid sequence homology with the  $\beta$ -glycosidase from other *Thermus* spp. Tt $\beta$ Gly gene was expressed in *E. coli* codon plus(DE3) cells by heat shock induction using the pJLA503 vector system. The *E. coli* cells were disrupted by sonication and the supernatant fraction was heat-treated at 85°C for 20min. The recombinant Tt $\beta$ Gly has a molecular mass of 48.7 kDa, determined by sodium dodecyl sulfate-polyacrylamide gel electrophoresis, and exhibited  $\beta$ -glycosidase activity. [This work was supported by the Marine and Extreme Genome Research Center Program, Ministry of Maritime Affairs and Fisheries, Republic of Korea.]

**Key words:** *Thermus thermophilus*, thermostable,  $\beta$ -glycosidase, heat shock