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## **Production of functional peptides using fish protein hydrolysates with inhibition ability against angiotensin I-converting enzyme using *E. coli* expression system**

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**Background:** There are various angiotensin-I converting enzyme inhibitors (ACEIs) have been investigated for palliating the hypertension.

**Methods:** To produce ACE inhibitor peptides, 15 fragments of DNA sequences encoded well-known ACEI peptides from fish protein hydrolysates, GW, IW, KW, LF, MF, VW, VY, YL, GPL, GPM, IKW, VY, IRPVQ, IWHHT and IYPRY, were designed as a combinative DNA encoded a fusion ACEI polypeptide which could be hydrolyzed into individual ACEI peptides by chymotrypsin. The combinative DNA consisted of 234 nucleotides was cloned into the pET-23a(+) expression vector and then transformed into *E. coli* BL21(DE3) expression host.

**Results:** After 8 h induction by 0.1 mM isopropyl- $\beta$ -D-thiogalactopyranoside, high activity of the recombinant fusion ACEI polypeptide was expressed. After sonication to disrupt the cell wall, the recombinant fusion ACEI polypeptide could be purified using Ni Sepharose™ 6 Fast Flow. The IC<sub>50</sub> value of recombinant ACEI polypeptide is 11.82  $\mu$ M. After chymotrypsin digestion, a 74-fold increase of ACEI activity (0.16  $\mu$ M) was obtained, which was equivalent to 0.022  $\mu$ M of captopril.

**Conclusion:** The ACEI activity of the chymotrypsin hydrolysate increased about 74-fold activity after hydrolysis. It can be used in the health food for the prevention of high blood pressure, and even the development of drugs for medication in the future.

### **Biography**

Shann-Tzong Jiang earned his Master Degree from Tokyo University of Fisheries, Japan, and PhD from University of Rhode Island, USA. He is a Fellow of the International Academy of Food Science & Technology, and National Endowed Chair Professor of the Ministry of Education of Taiwan. Currently he is working at the Department of Food Science, National Taiwan Ocean University, and at Providence University as Senior Vice President. He has published more than 170 papers in reputed journals and has been serving as Editorial Board Member of several reputed journals.

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