

1-15. Molecular Cloning and Expression Patterning of Novel Gene in the Silk Gland from Larval Trichoptera

Jai Hoon Eum^{1,2}, Tae Won Goo², Eun Young Yun², Jae Sam Hwang², Seok Woo Kang² and Sung Sik Han^{1*}

¹*Graduate school of biotechnology , Korea University*

²*Department of Sericulture and Entomology, NIAST, RDA*

Expressed sequence tags(ESTs) constitute a rapid and informative strategy for studying gene-expression profiles of specific stages and tissues. In this report, a cDNA library constructed from late larval *Hydropsyche sp.* was used to generate ESTs. Caddis larval silk-gland produce silk which are used in constructing their retreats and cases in the aquatic situation. From the study, 397 cDNA clones were sequenced from 5' end of the cDNAs. Cluster analysis identified 43 groups of sequences and 206 singletons indicating that the database represents a total of 249 genes. Putative functions say that 101 ESTs(26%) matched known genes, while 295 ESTs did not match with any known genes suggesting that possibly novel gene fragment. Approximately 42% of the total ESTs was found to be the redundant ESTs having 6 or more EST in the same cluster. Expression analysis which shows silk gland specificity and intensity represents that 106 ESTs were expressed in the silk gland. Among the redundant and silk gland specific ESTs, The most redundant EST, SG0165 was sequenced to be full length cDNA and analysed by Northern blotting and *in situ* hybridization. Full length SG0165 clone consisting of 1827bp has repetitive amino acid sequences. Northern blotting analysis showing that SG0165 EST has two transcripts, about 1400bp and 1800bp length means other SG0165 homologue was expressed in the silk gland. *in situ* hybridization analysis indicates that SG0165 mRNA was relatively strong expressed in the outer layer of silk gland. Taken these results together, Trichopteran silk gland has high-copy number of silk gland specific genes including SG0165 clone that should be further used as industrially important genes for the producing of silk and adhesive materials.