

Regulation of Sex Pheromone Biosynthesis and Structure of PBAN cDNA in *Adoxophyes* sp. Collected from Pear Orchards in Korea

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On the smaller tea tortrix, *Adoxophyes* sp. from pear orchards, a series of studies about regulation of their pheromone production, structure of their PBAN (Pheromone Biosynthesis Activating Neuropeptide) cDNA, and histochemistry on neuronal cells producing PBAN-like peptides were conducted.

Through GC analysis, *A. sp.* was found to use (Z)-9-tetradecenyl acetate (Z9-14Ac) and (Z)-11-tetradecenyl acetate (Z11-14Ac) as sex pheromone components. Composition of pheromone components was 40 : 60 between Z9-14Ac and Z11-14Ac in pheromone gland extract and female effluvia. Mating behavior and pheromone production in *A. sp.* showed diel rhythm. *A. sp.* mated and maximally produced the pheromone immediately after lights-on under 16L/8D. Pheromone production was stimulated by injection of male or female head extracts, or Hez-PBAN. So, it was proposed that pheromone production in *A. sp.* be regulated by a neuropeptide, maybe PBAN, produced from the head.

A 750 bp-long cDNA encoding PBAN of *A. sp.* was fully characterized. PBAN cDNA contained a predicted open reading frame (ORF) of 576 nucleotides encoding an 192-amino acid long polypeptide. This polypeptide was predicted to be cleaved into 5 putative peptides including PBAN by endoproteolytic processing. PBAN of *A. sp.* is a 31-amino acid long neuropeptide which has 35-48 % homology with PBANs from other moths. Other four putative peptides encoded in PBAN cDNA of *A. sp.* are 24-amino acid (peptide I), 7-amino acid (peptide II), 20-amino acid (peptide III), and 8-amino acid long (peptide IV). Among them, peptide III and PBAN have FXPRL amide (X = T and S) in C termini. But peptide I has FKPIIL amide, peptide II FTPKL amide, and peptide IV LTPRL amide in C termini.

Through immunocytochemical analysis, neuronal cells producing PBAN-like peptides were identified. Immunoreactive cells were located in the brain, suboesophageal ganglion (SG), and some ganglia in the ventral nerve cord (VNC). A pair of neurites from immunoreactive cells in the SG descended through the VNC and terminated in the terminal abdominal ganglion (TAG).