

Inhibiting Estrogen Action in Testis and Epididymis of the Adult Male Mouse

Myung-Hoon Kim^{*}, Byung-Woon Min¹ and Hyun-Wook Cho²

Dept. of Physical Therapy, Kwangju Health College; Dept. of Clinical Pathology, Kwangyang College¹; Dept. of Biology, Suncheon National University, Suncheon 540-742²

암컷호르몬인 에스트로젠은 동시에 유방암을 일으키는 한 요인으로도 알려져 있다. 이 에스트로젠이 수컷의 생식기관내에서 합성되어 존재한다는 사실은 이미 밝혀져 있다. 따라서 에스트로젠이 수컷의 혈액 내에 낮은 농도로 존재하지만 정액과 정소망의 용액 내에는 높은 농도로 존재한다. 다른 호르몬과 마찬가지로 에스트로젠도 수용체를 통하여 그 기능을 나타내는데 수컷 생식기관내에서 에스트로젠의 기능을 규명하기 위하여 에스트로젠 수용체가 결핍된 (estrogen receptor knockout, ERKO) 마우스를 재료로 하여 연구가 이루어졌다. 정소의 분비물이 수출소관에서 부정소로 이동하는 과정에 에스트로젠이 수용체에 결합하여 분비물을 재흡수하는 기능을 함으로써 용액속의 정자농도를 농축시키며 이 때 에스트로젠이 작용하지 못하면 분비물을 재흡수하지 못한 관계로 결국 분비물 속 정자의 농도가 낮아져서 불임이 유발된다. 유방암 치료제로 사용하고 있는 ICI 182,780과 같은 항에스트로젠은 에스트로젠 수용체와 경쟁적으로 결합하여 내인성의 에스트로젠 작용을 저해한다. 본 연구에서는 항에스트로젠 물질인 ICI 182,780으로 처리한 마우스 정소 및 부정소의 형태학적인 변화와 ERKO 마우스와의 유사성을 비교해보기 위해 처리 후의 날짜별로 조사하였다. 대조군과 처리군의 체중에는 유의한 차이가 없었으며 정소의 무게는 유의성의 차이는 없었으나 59일차 처리군의 무게는 증가하였다. 대조군의 정세관 직경은 처리 후 16일 자까지 확장되고 실험 종료일에 이르러서는 축소되는 것으로 나타났다. 대조군의 정소망 직경은 시간이 지남에 따라 확대되지 않았으나 처리군에서는 실험기간동안 확대되고 59일 후에는 241%까지 확대되었다. 정소망의 상피세포의 높이는 실험기간동안 대조군에 비해

총 22%까지 감소되었다. 처리군의 부정소의 경우, initial segment 부위에서 분화된 상피세포, 즉 narrow 세포의 세포질내 vesicle 숫자와 크기가 대조군에 비해 증가되었다. ICI 처리 후 8일된 처리군의 경우 투명세포와 주세포의 세포질에 있는 vesicle의 수가 증가되었고 특히 corpus 부위에 있는 이들 세포의 vesicle은 그 크기가 확장되었다. 정자의 수는 cauda 에 있는 정자의 두부를 확인하여 계산하였는데 두군의 유의성 있는 차이는 처리 후 주로 16, 25, 59 일자에 나타났으며, 정자수의 총 평균은 대조군이 67.4 ± 2.7 , 처리군이 58.6 ± 2.3 으로 각각 나타났다.

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Morphological Changes in Development of Bursa Copulatrix on *Artogeia melete*(Lepidoptera)

Jung-In Kim^{*} and Seon-Woo Cheong
Dept. of Biology, College of Natural Sciences, Changwon National University, Changwon, Kyungnam 641-773

The development of the bursa copulatrix of *Artogeia melete* was studied histologically. Materials were female pupae and they were supplied by breeding from egg stage. The formation of bursa copulatrix was not found at larval stage. At pupal stage, from 2 day-pupae to 7 day-pupae were dissected and the bursa copulatrix were removed. At adult stage, both fertilized individuals and virgins were dissected. Removed bursa copulatrix were observed under light microscope histologically, stereoscope and SEM. The bursa copulatrix of *Artogeia melete* was found from 2 day-pupal stage. At this stage, small corpus bursa and larger appendix bursa was found, and the appendix bursa was gradually reduced in size to the stage. The corpus bursa was compressed from 5 day-pupal stage, and the compression was relieved by inclusion of spermatophore. Innersurface processes were distributed on the innersurface except around the signum.

The signum was found on the innersurface from 2 day-pupal stage as two bilateral folds. The signum formed heart-shape and sclerotized gradually. The suture between two sclerotized bilateral plate was elongated to time. The signum specific cell were lined on the back of signum.

C105

Morphological Changes in Development of Bursa Copulatrix on *Colias erate*(Lepidoptera)

Ok-Hui Im^{*} and Seon-Woo Cheong

Dept. of Biology, College of Natural Sciences,
Changwon National University, Changwon,
Kyungnam 641-773

The development of the bursa copulatrix of *Colias erate* was studied histologically. Materials were female pupae and they were supplied by breeding from eggs. The formation of the bursa copulatrix was not found at larval stage. At pupal stage, from 2 day-pupae to 5 day-pupae were dissected and bursae copulatrix were removed. At adult stage, both 5 or more fertilized and unfertilized females were dissected respectively. Removed bursae copulatrix were studied morphologically with binocular, stereoscope and SEM. The development of bursa copulatrix of *Colias erate* was confirmed from 2 day-pupal stage. At this stage, small corpus bursa with rudimental appendix bursa was found, and the appendix bursa was gradually grown up. The corpus bursa was compressed from 3 day-pupal stage, and swelled spherically by inclusion of spermatophore. Innersurface processes were distributed on opposite side of the signum. The signum was found on innersurface from 2 day-pupal corpus bursa and sclerotized from 5 day-paupal stage.

C106

Study on the Dopamine Transporter mRNA and Tyrosine Hydroxylase Protein in the Rat Midbrain by Nicotine and Smoking Exposure

Kun-Yang Kim^{*1}, Jong-Yoon Bahk² and Myeong-Ok Kim¹

Department of Biology¹ and Urology² Gyeongsang National University

Smoking is a highly addictive drug that binds to the dopamine transporter (DAT), initiates multiple actions within midbrain dopaminergic neuronal systems, and many of these alterations are permanent. DAT mRNA expression is accompanied by other presynaptic and postsynaptic dopamine neuronal changes. TH is rate-limiting enzyme of dopamine synthesis in the midbrain. TH and DAT are expressed in the substantia nigra pars compacta (SNpC), ventral tegmental ares (VTA). The object of these study was to determine the effects of nicotine and smoking exposure on the TH protein, DAT mRNA expression in the midbrain. Daily adult male sprague-dawley rats were administrated for 10 min, 30min and 1hr with cigarette smoking (3 times x 500 ml/day: 4 weeks, n=5) and nicotine (3 mg/day x 200 ml 4 weeks, n=5). TH protein and DAT mRNA were determined by immunocytochemistry and *in situ* hybridization. DAT mRNA and TH protein of nicotine group and smoking group were significantly decreased in SNpc and VTA. There for smoking, nicotine tended is higher suppresses on the DAT mRNA and TH protein expression than control in the rat midbrain. DAT binding sites show a distribution pattern similar to TH immunoreactivities. These results demonstrated that nicotine and smoking exposure suppresses expression for important regulatory proteins in the rats midbrain dopaminergic system.