

## The effect of *in utero* and lactational exposure to 3,3',4,4',5-pentachlorobiphenyl on ovarian follicles of female rats at the first ovulation

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**Aim of this study:** We have shown that *in utero* and lactational exposure to 3,3',4,4',5-pentachlorobiphenyl (PCB126), one of widespread environmental contaminants, affects reproductive development in female rats, such as reduction in number of the oocytes shed at the first ovulation. In order to determine whether or not the phenomenon is due to impairment of follicle development, we analyzed ovarian follicle number morphometrically at the first ovulation in the PCB-exposed rats.

**Materials and methods:** Female offspring from dams given orally either with corn oil (control), 10 or 100 µg/kg PCB126 on gestational day 15 were euthanized and examined for ovulation on the day of vaginal opening. Each three females in the control and 10 µg/kg-exposed groups and one female in 100 µg/kg-exposed group were confirmed the first ovulation, and their ovaries were collected and embedded in paraffin after fixation in Bouin's solution. The entire ovaries were cut serially into 6 µm-sections and stained with hematoxylin and eosin. Only follicles that contain oocytes with nucleus were classified as primordial/primary, preantral and antral, and were counted in every twentieth, every tenth and every section, respectively. Antral follicles were further divided into two groups; larger than 400 µm in diameter or smaller. Furthermore, each follicle was examined for atretic signs such as distortion and granulosa cell (GC) pyknosis.

**Results and discussion:** When compare the number of follicles between control and 10 µg/kg-exposed groups, no significant differences were found in any classes of healthy follicles. In contrast, the number of atretic follicles was significantly increased in antral (larger than 400 µm in diameter) class but not in preantral or smaller classes. In the ovary of one animal exposed to 100 µg/kg PCB, the number of follicles was small in all over the classes, but antral follicles larger than 500 µm were still remained in the ovary. Since these large follicles showed severe atretic signs, they had not responded to ovulatory gonadotropin surges for the first ovulation. These observations indicate that PCB126-exposure impairs antral follicle at late stage of the development.