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Title	A STUDY OF THE SURFACE STRUCTURE OF MOUSE OVIDUCTAL AND UTERINE EPITHELIUM, WITH SPECIAL REFERENCE TO CHANGES DURING THE REPRODUCTIVE CYCLE, SUPEROVULATION AND OVARIECTOMY
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Citation	Japanese Journal of Veterinary Research, 34(2), 145-145
Issue Date	1986-04-30
Doc URL	https://hdl.handle.net/2115/2992
Type	departmental bulletin paper
File Information	KJ00002374399.pdf

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A STUDY OF THE SURFACE STRUCTURE OF MOUSE OVIDUCTAL AND UTERINE EPITHELIUM, WITH SPECIAL REFERENCE TO CHANGES DURING THE REPRODUCTIVE CYCLE, SUPEROVULATION AND OVARIECTOMY

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Surface epithelium of the mouse oviductal ampulla, isthmus and uterus were observed during the reproductive cycle by scanning electron microscopy. The effects of superovulation, ovariectomy and administration of estrogen on the surface epithelium were also studied. Cell height of the uterine epithelium was measured, and the percentage of ciliated cells in the oviductal epithelium was counted.

Observations were carried out on the following: 1. immature mice, 2. mice during infertile reproductive cycle, pregnancy and parturition, 3. superovulated mice, 4. ovariectomised mice and effects of administration of estrogen.

1. In the immature mice, the microvilli in the uterine epithelium were short, while the cilia and microvilli of the oviductal epithelium were long. Hence, it was observed that the oviductal and uterine epithelium of immature mice was morphologically well developed.

2. During the infertile reproductive cycle, pregnancy and parturition, the uterine surface epithelium was covered with microvilli and was almost similar morphologically. However, on the fifth day of pregnancy and at the time of implantation, characteristic changes were observed to occur on the surface epithelium. The height of the cell was increased and the surface was roughened and there were no microvilli present.

In the oviductal epithelium, there was an increase in the ciliated cell number with erection of cilia at estrous. During diestrous, there was a decrease in the ciliated cell number and slight folds were observed on the non-ciliated surface. Similar findings to those of metestrous and diestrous were seen during pregnancy, while those of postparturition were similar to those of proestrous.

3. Superovulation in both the immature and the mature mice caused an increased number of ciliated cells in the oviductal epithelium, especially in the isthmus. In the uterine epithelium, similar characteristic changes to those of naturally ovulated mice occurred at implantation (fifth day of pregnancy) but cell height was not increased.

4. In the ovariectomised mice, the microvilli of the uterine epithelium were shortened, while in the oviductal epithelium, there was an increase of the ciliated cell number, with atrophy of the cilia. With administration of estrogen, there was development of microvilli in the uterine epithelium, and recovery of ciliated cell number was observed in the oviductal epithelium.