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INDUCTION OF PSEUDOPREGNANCY IN RATS

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In mammalian species, pseudopregnancy is a physical state whereby all the signs and symptoms of pregnancy are exhibited, with the exception of the presence of a foetus, creating a false pregnancy. This condition is usually caused by the action of the corpus luteum, which is responsible for the development of maternal behavior and lactation and is usually active in a state of real pregnancy. But in some species, the corpus luteum can persist without pregnancy and cause pseudopregnancy.

Pseudopregnancy is a disease for human and some species in nature, but it is used in rats as an important part of laboratory research and is necessary for the transfer and proper development of genetically modified embryos.

In the 40s of the 20th century it was first revealed that this condition can be artificially inducted by the administration of estrogen. From that moment, new methods of inducing pseudopregnancy in rats were discovered.

It is now known that it can be inducted by injection of the hormones estrogen or progesterone; most often in laboratories pseudopregnancy is caused by mating with vasectomised males; and recently a new method using sonic vibration was invented.

Recently, many types of genetically modified rats have been produced to study human diseases. Genome editing technology, CRISPR-Cas system, has further increased the frequency of production of genetically modified strains.

Embryo transfer is necessary for the efficient production of new strains from these genome-edited embryos. In rats, embryos are usually transferred to the oviducts of females. Females need stimulation of pseudopregnancy to maintain a real pregnancy and the proper bearing of offspring.

Therefore, the induction of pseudopregnancy is a very important stage for the laboratory study of disease, including human`s. And the search for more economical and more comfortable for use methods is still a promising area of research.

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