

# Details of Technology

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|--------------------|---|--------------|
| Name of Technology | Super-early pregnancy factor (super-EPF)  | Life Science |
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| Key words          | bovine, super-early pregnancy diagnosis, immunosuppression                      |              |

What kind of technology is this?

## Outline

**Technique for diagnosis of fertilization of bovine within 7 days after mating**  
**Additives for *in vitro* bovine fertilization medium**  
**Immunosuppressors for the inhibition of the growth of human tumor cells and virus-infected cells**

We are now determining the structure of bovine super-EPF and examining the possible application of the factor to the diagnosis of super early pregnancy and the development of an immunosuppression agent.

The super-early pregnancy factor (super-EPF) has been detected in maternal blood in early pregnancy in various mammals including humans and it has been known that the factor is the fertilization signal at the super-early stage of pregnancy. The production mechanism and the structure of super-EPF are still covered with a veil because of the difficulty of the detection method (bioassay), specialty of the research material (early stage of pregnancy) and the very small serum content. The representative of this research project is only one researcher engaged in the study on bovine super-EPF in the world. Only our research group in the world is now purifying the factor from bovine serum obtained at the early stage of pregnancy (within 1 week after fertilization) to establish a simple assay system using monoclonal antibody. There is no method for examining the conditions of maternal body and embryos between fertilization and implantation. The super-EPF appeared in the maternal blood from 24 hours after fertilization is the first signal transmission substance between embryos and maternal body. Therefore, the diagnosis of pregnancy at the super-early pregnant stage can be performed by the detection of this factor. We produced three clone candidates for the production of monoclonal antibody against bovine super-EPF for the first time in the world. Thus we are now developing an assay kit for the detection of bovine super-EPF using the antibody, analyzing the structure of super-EPF and pursuing the application of super-EPF.

What are its applications?

The diagnosis of bovine pregnancy can be performed easily within 7 days after artificial insemination. The commercialization of the factor is possible in pregnancy diagnosis/veterinary doctors, artificial insemination experts and farmers. Immunosuppressing action of super-EPF. Inhibition of the growth of tumor cells and virus-infected cells. The commercialization of the factor is possible in immunosuppressors/medicine.

Related patents

Related materials

Ito K., Takahashi M., Kawahata K., Goto T., Takahashi J. and Yasuda Y. (1998) Supplementation effect of early pregnancy factor-positive serum into bovine in vitro fertilization culture