Ericsson Method of Sperm Separation

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In 1973, Ronald Ericsson developed the Ericsson method, which is a technique used to separate human male sperm cells based on their genetic material. Ericsson, a physician and reproduction researcher, developed the method while conducting research on sperm separation in Berlin, Germany, in the early 1970s. He found that the sperm cells that carry male-producing Y chromosomes move through liquid faster than the cells that carry female-producing X chromosomes. After centrifuging, the sperm cells are separated into two groups, male and female, based on their motility. Ericsson's method is based on the principle that sperm cells carrying Y chromosomes will move through liquid faster than those carrying X chromosomes.

Humans have two sex chromosomes, one passed down from each parent, which affect their biological sex characteristics. People with two X chromosomes are biologically female, while people with one X and one Y chromosome are biologically male. Since females have two X chromosomes, they are able to contribute only an X chromosome to their offspring. Males have both X and Y chromosomes and can therefore contribute either an X or a Y chromosome to their offspring. Therefore, male sperm cells are responsible for determining the sex of an embryo, as the male sperm cell that fertilizes the female egg always contains an X chromosome, meaning that it can only contribute an X chromosome to the offspring. In contrast, female sperm cells contain both X and Y chromosomes, and can therefore contribute either an X or a Y chromosome to the offspring.

In the early 1970s, Ericsson, a physician who specialized in reproductive sciences, conducted research on sperm separation in Berlin, Germany. He claimed that a strong desire to have a child of a particular sex often causes couples to have many children until their favored sex is achieved, and that utilizing his method of sex selection would therefore reduce the society's chance of possible overpopulation.

Two years after its initial development, a clinical trial tested the Ericsson method for sex selection. In December 1974, Ericsson patented his method and included the objectives of his separation technique, which he listed as follows:

1. To provide a process for separating human male semen samples into two groups, male and female, based on their motility.
2. To use the separated groups for artificial insemination to increase the likelihood of producing male offspring.

During that initial clinical trial, physicians successfully impregnated seven women using artificial insemination, with sperm samples that were separated by the Ericsson method. Of those seven, five women delivered male infants. The researchers involved in the initial clinical trial determined that when sperm cells are separated using the Ericsson method and artificially inseminated for sex selection, couples would need to inject the Y chromosome-bearing cells directly into a female's reproductive tract, as the Y chromosome-carrying sperm cells are separated from the albumin medium in the patient's body after the sperm cells are separated.

The Ericsson method was patented in 1974, and the method has been used in various clinical trials since then. However, the success rates for couples that have achieved their desired sex are not advertised directly. Instead, the website provides citations of scientific papers that discuss the development of the Ericsson method and data from clinical trials that only support the method's effectiveness. In a memorandum from the company published in October 1987, Genetics Limited claimed that their Sperm Centers have demonstrated an 86 percent success rate for producing a male offspring. However, the results do not confirm or contrast the results from their original publication and should be disregarded entirely.

Sources

[1] Published on The Embryo Project Encyclopedia (https://embryo.asu.edu)
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Subject
- Sex chromosomes
- Gonosomes
- Sperm
- Male gametes
- Spermatogonia
- Sex Preselection
- X-Chromosome-Bearing Sperm
- Y-Chromosome-Bearing Sperm

Topic
- Technologies