ZyMōt Sperm Separation Device
Patient Information

What is ZyMōt?

The ZyMōt Multi Sperm Separation Device, commonly referred to as a **sperm sorting chip**, is a tool which prepares motile sperm for reproductive technology procedures. The device mimics how sperm naturally travel through the female reproductive system and separates the best quality sperm which can be used for treatment. This is achieved by sperm moving through a membrane filter embedded in the chip. Studies suggest this device isolates progressively motile sperm with less **DNA fragmentation**.

What is sperm preparation and why do we do it?

Sperm preparation is a crucial step in assisted reproductive treatments to ensure that the best quality sperm is used. This process involves processing the sperm sample to remove any debris, dead sperm, and other cells, leaving behind the most motile (active) and healthy sperm. This is important because using high-quality sperm can increase the chances of successful fertilisation and embryo development.

How does ZyMōt work?

ZyMōt is a sperm-separation device designed to select the healthiest sperm for use in fertility treatments. It works by passing a semen sample through a special filter that separates the most motile (active) sperm from the rest. Here's a simplified breakdown:

- The semen sample is placed into the lower chamber of the ZyMōt device.
- The sperm move through a microporous filter to reach the upper chamber.
- Only the most active sperm can navigate through the filter into the upper chamber.
- The selected, highly motile sperm are collected from the upper chamber for use in assisted reproductive treatments.

For a video presentation please visit: **https://www.youtube.com/watch?v=S_MiBX8tfng**

Why is sperm DNA important and what is DNA fragmentation?

The sperm cell transports half of the genetic material necessary to fuse with the egg, forming the genetic blueprint for the offspring. This combined DNA contains the essential instructions for embryo development. Any damage to this genetic code can hinder the sperm's ability to successfully fertilise the egg or support the formation of a healthy embryo.

Sperm DNA fragmentation refers to the damage and breaks in the genetic material. This damage is commonly caused by Reactive Oxygen Species (ROS) which are naturally occurring molecules produced within the cells. Some people may have high sperm DNA fragmentation which can be tested for using a DNA fragmentation test. Some research suggests that other sperm preparation methods may increase DNA fragmentation while the **ZyMōt device aims to reduce this**.

For more info on DNA fragmentation please visit: **https://www.fertilitybristol.com/your-journey/fertility-tests/male-fertility-tests**

Why does high DNA fragmentation matter?

It is important to note that conception is still possible for those with high sperm DNA fragmentation. However, studies have shown that individuals with high levels of sperm DNA fragmentation may experience lower pregnancy rates, longer time to conception, or higher miscarriage rates. In patients undergoing fertility treatment, high levels of DNA fragmentation in sperm can negatively impact early embryo development, potentially affecting the success of assisted reproductive procedures.

Who is ZyMōt suitable for?

The ZyMōt Multi Sperm Separation device is suitable for a variety of assisted reproductive procedures with fresh or frozen samples, including:

- Intracytoplasmic sperm injection (ICSI).
- Intrauterine insemination (IUI).
- In vitro fertilisation (IVF).

Limitations of ZyMōt: While ZyMōt offers advanced sperm sorting capabilities, it may not be suitable for all cases. The ZyMōt Multi-device requires a minimum of 1 million progressively motile sperm per ml for treatment. If requested to use for treatment, an embryologist will advise on the day of treatment if the sample is appropriate for ZyMōt.

What evidence is there for using ZyMōt?

As a relatively new technology, limited studies have been conducted on ZyMōt in the context of assisted reproductive technology procedures. Some studies have shown promising results for:

- Reduction in DNA Fragmentation: Research on ZyMōt has indicated a notable reduction in DNA fragmentation compared to previous sperm preparation methods (Cheng Teng et al., 2023). This suggests that ZyMōt may contribute to the improvement of sperm quality.
- Some studies suggest pregnancy rates are higher using ZyMōt compared to previous sperm preparation methods (Zaha et al., 2023).

Whilst these studies have shown some benefits others do not (Quinn et al., 2022).

For research on ZyMōt please visit:
https://www.Zymotfertility.com/wp-content/uploads/2023/03/Zymot-Fertility_Publications-by-Topic_Mar-2023.pdf

HFEA (Human Fertilisation and Embryology Authority)

It's important to note that sperm sorting technologies, including ZyMōt, are not currently mentioned or rated on the Human Fertilisation and Embryology Authority (HFEA) website. ZyMōt is considered a treatment add-on, and the HFEA uses a rating system to evaluate the effectiveness and safety of various fertility treatment add-ons. ZyMōt is not yet rated by the HFEA because it is a relatively new technology, and sufficient independent clinical evidence and reviews may still be in progress.

Cost

The charge for ZyMōt can be found on our website:
https://www.fertilitybristol.com/our-prices/our-prices

If on the day of treatment, the sample is not appropriate for ZyMōt any fees for this will be refunded.

Patients should discuss the use of ZyMōt with their healthcare provider and seek guidance based on individual circumstances and preferences.

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