

MALE INFERTILITY OXIDATIVE SYSTEM

Complete, accurate and rapid
seminal oxidative stress diagnostic



MiOXSYS[®]

 **CaerusBiotech**
Part of Gryllumber Health Group

A NOVEL LOOK AT MALE INFERTILITY

Male infertility contributes to at least 50% of all infertility cases worldwide and around 50% of all male infertility causes remain categorized as idiopathic.¹

Idiopathic infertility: „In men with idiopathic infertility, despite completing diagnostic investigations, the cause of altered semen parameters cannot be identified.“²

A new generation of diagnostic tools and therapeutic approaches are necessary to remove further uncertainty around male infertility in order to improve its diagnosis and management.

An abundance of evidence suggests that oxidative stress plays a significant role in the aetiology of male infertility.³

KEY FACTS ABOUT SEMINAL OXIDATIVE STRESS

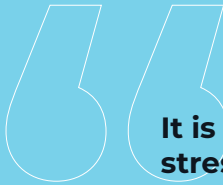


Occurs when the production of potentially destructive reactive oxygen species (ROS) exceeds the body's own natural antioxidant defences, resulting in cellular damage.

Oxidative stress is a common pathology among infertile men which⁴:

- Significantly reduces the chances of conception - both naturally and using any of the ART procedures.^{4,5,6}
- Contributes up to 80% of idiopathic male infertility and it is a potentially treatable condition.¹

OXIDATIVE STRESS – IMPORTANT FACTOR RECOGNIZED IN MALE INFERTILITY WORLDWIDE



It is generally accepted that oxidative stress is likely to be an important modulator of human sperm function and conception outcomes.⁷

WORLD HEALTH ORGANIZATION

Oxidative stress is considered to be central in male infertility by affecting sperm quality, function, as well as the integrity of sperm.⁸

EUROPEAN ASSOCIATION OF UROLOGY

The main cause of DNA damage is oxidative stress and this seems to be exacerbated by smoking, obesity and excessive exercise.⁹

ESHRE

MiOXSYS®

MiOXSYS® – a complete, definitive and rapid seminal oxidative stress measurement system.

It is an in vitro diagnostic semen analysis test utilizing an electrochemical technology for the qualitative measurement (millivolts [mV]) of Oxidation-Reduction Potential (ORP) in human semen.

ORP is an integrated measure of the balance between total levels of oxidants and antioxidants in human semen. It reflects the oxidative relationship between the sperm cell and its environment.



WORLD HEALTH ORGANIZATION 6TH EDITION ON SEMEN ANALYSIS RECOGNIZES ORP:

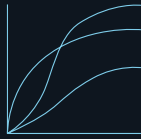


4.1.3. Oxidation-reduction potential. This method is based on direct measurement of the REDOX balance of a sample by electrochemical means.

*As an integrating measurement of the combined sample (**COMPLETE**) that requires minimal manipulation (**EASY TO USE**) therefore is quite standardizable (**CLINICALLY VALIDATED**) it is currently a topic for much research in subfertility (**WELL RESEARCHED**).*

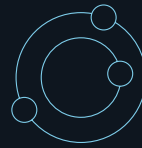
Currently only one machine exists on the market which has patent protection. It uses single-use sensors for measurement.⁷

WHY MIOXSYS® ?



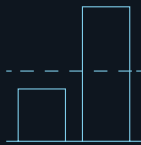
WELL RESEARCHED

WHO recognised,
~150 scientific
publications



COMPLETE

Measures the balance
between all oxidants
and antioxidants



CLINICALLY VALIDATED

Established
cut-off value



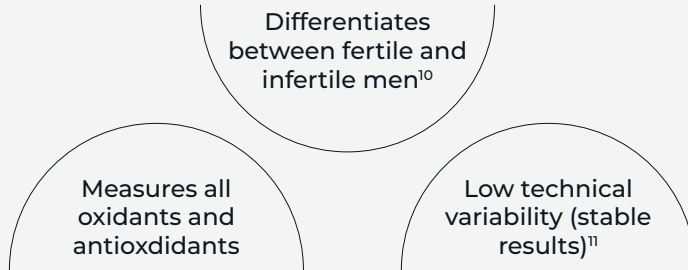
EASY TO USE

Test takes
5 min



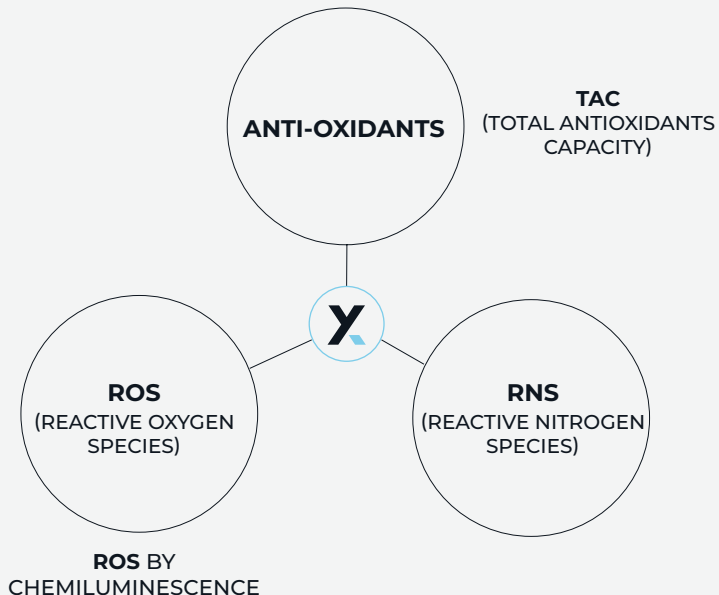
COMPLETE

MIOXSYS® - THE ONLY SYSTEM THAT PROVIDES FULL PICTURE OF REDOX BALANCE IN SEMEN

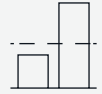


MiOXSYS® ORP measure is based upon the principle of oxidation-reduction potential which measures the giving and the taking of electrons.

Unlike other measures, ORP represents an integrated measure of all oxidants and antioxidants, making it more clinically meaningful measure.



MIOXSYS® – HAS CLINICALLY ESTABLISHED CUT-OFF VALUE TO DETERMINE THE MALE FERTILITY POTENTIAL¹⁰



CLINICALLY
VALIDATED

A multi-center evaluation demonstrated¹²:

- A.** A cut-off value of 1.34 mV/10⁶ sperm/ml for ORP provides the greatest predictability when identifying abnormal/normal semen quality.
- B.** Abnormal ORP levels can be useful in identifying altered sperm functional status, especially in cases of idiopathic infertility and/or in male partners of couples who have suffered recurrent pregnancy loss.



Results in
5 min



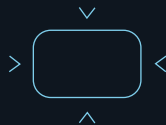
Flexible time for
semen collection:
240 min



Complimenting
standard semen
analysis (same
sample, same time)



Staff trained
in 60 min



Small/portable
countertop
device



Easy integrated
within lab



EASY
TO USE

MALE OXIDATIVE STRESS MANAGEMENT PATHWAY

DIAGNOSTIC

BASIC SEMEN ANALYSIS

OXIDATIVE STRESS
ORP ≥ 1.34 mV/ 10^6 sperm/mL

VARICOCELE

INFLAMMATION/
LEUKOCYTOSPERMIA
(prostatitis, MAGI)

TREATMENT

VARICOCELECTOMY

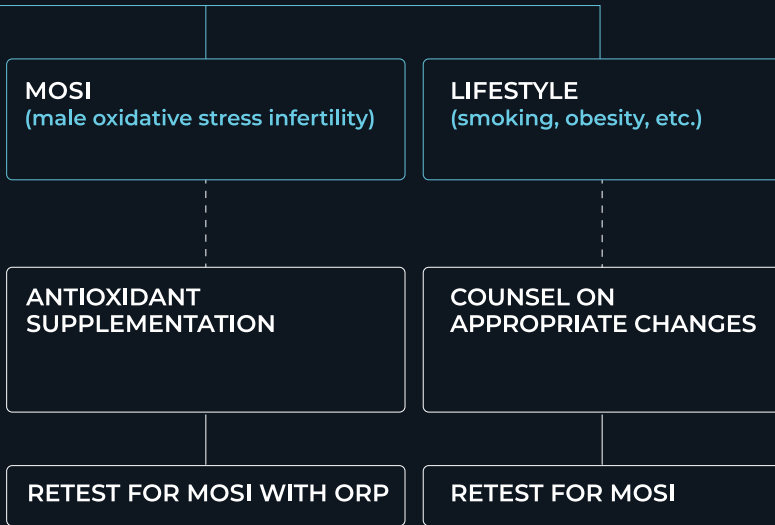
ANTIBIOTICS
ANTI-INFLAMMATORY
+ ANTIOXIDANT
SUPPLEMENTATION

RETEST FOR MOSI

RETEST FOR MOSI

Agarwal A, Parekh N, Panner Selvam MK, et al. Male Oxidative Stress Infertility (MOSI): Proposed Terminology and Clinical Practice Guidelines for Management of Idiopathic Male Infertility. World J Mens Health. 2019;37(3):296-312. doi:10.5534/wjmh.190055

**OXIDATIVE STRESS
EVALUATION BY ORP**



LEARN MORE ABOUT
MALE OXIDATIVE STRESS
AT MIOXSYS LEARNING
HUB



Oxidative Stress
diagnostics and
management

5 LEARNING MODULES ON MALE OXIDATIVE STRESS BY MIOXSYS

MODULE 1

Male reproductive system
and oxidative stress

MODULE 2

REDOX balance and
male infertility

MODULE 3

Introduction to
Mioxsys system

MODULE 4

Mioxsys scientific
evidence

MODULE 5

Mioxsys – complete oxidative
stress diagnostics

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