

Computer Assisted Semen Analysis

**CASA**

Mira 9000 Sperm Analyzer

A L O O K F O R W A R D

 **Rubaidi**  
MEDICAL CORPORATION

# CASA

## Mira9000 Sperm Analyzer



### Mira9000 (CASA) Specifications:

#### System Components:

1. PC include Mira9000 CASA software.
2. Mira9000 special slide.
3. Temperature controller.
4. Soft key.

#### Database:

- The in-built database enables the user to store, backup and restores any kind of obtained information.
- The in-built database enables the user to generate a historical report for any patient.
- The in-built database is capable of helping researcher by generating many statistics reports.

#### Other features of Mira 9000 Software:

- Mira 9000 software is able to automatically add appropriate comments according to the patient results.
- Mira 9000 software has the ability to generate a custom reports like urine, stool, CBC and bone marrow with any captured image using the system digital camera and microscope.
- Mira 9000 software allows the user to record and print the manual test result of semen.

#### System Requirements:

1. Trinocular Microscope with plan objective lens.
2. CCD camera ( Minimum480TV line).
3. Color printer.

#### Standard Methods:

- Mira 9000 CASA includes two standard methods, "Dynamic" and "Morphology", a facility for automatic report generation, and an in-built database. The analysis of the parameters is performed according to the recommendations given by the Worldwide Health Organization (WHO) for the 4th edition (latest 5th edition is available as well).
- The parameters that can be determined with help of the Mira 9000 CASA are the main ones for estimation of the sperm fertility.

#### Dynamic Standard Method:

- The method is designed to estimate the spermatozoa concentration and their motility in a native specimen.
- Determining spermatozoa concentration in ( Million/ ML)
- Measuring spermatozoa movement parameters and classifying spermatozoa into motility classes in accordance with WHO recommendations.
- Measuring spermatozoa dynamic parameters ( VCL, VSL, VAP, MAD, ALH, BCF, LIN, WOB and STR)

#### Morphology Standard Method:

- The method is designed to determine the morphological parameters of spermatozoa.
- The software of 5th edition morphology can automatically calculate TZI, SDI and MAI parameters.

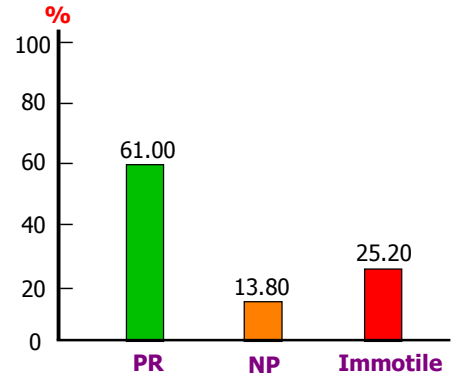
## Computer Assisted Semen Analysis (Mira-9000 CASA)

The system follows WHO (2010) strict criteria for motility patterns & morphometric assessment of human semen.

Case no.	201202218	Name	
Date	2012/02/21	Lab ID	330
Ref. by		Age	30 Years
Collection	Masturbation at lab	Abstinence	4 Days

### Physical properties :

Volume	: 2.6	≥ 1.5 ml
pH	: 7.3	≥ 7.2
Color	: Grey Opalescent	
Odor	: Normal	
Viscosity	: Normal	
Liquefaction time	: 45 min.	
Liquefaction state	: Complete	



### Test result :

Test	Result	Status	Reference Value
Concentration (million/ml)	: 115.70	PASSED	≥ 15 (million/ml)
Total sperm no. (million)	: 300.82	PASSED	≥ 39 (million/Ejaculate)
Progressive motility (PR)	: 61.00	PASSED	≥ 32 %
Total Motility (PR+NP)	: 74.80	PASSED	≥ 40 %
Morphology index	: 20.00	PASSED	≥ 4 % normal is accepted
Vitality	: 85 %	PASSED	> 58 %

### Agglutination & Aggregation :

Agglutination : Nil	Non-specific Aggregation : Nil
Agglutination grade : -	

### Cells other than sperms :

White Blood Cells	: 0 - 1	< 5 /H.P.F
Red Blood Cells	: 0 - 1	< 5 /H.P.F
Spermatogenic cells	: 3-5	/H.P.F
Epithelial cells	: 0 - 1	/H.P.F

Pinheads : 3 million/ml

Pinheads sperms are not counted as spermatozoa or head defects because they possess no chromatin or head structure anterior to the basal plate.

### Comment :

Normal seminal profile

The semen passed the W.H.O. strict criteria for count, motility and morphology.

## Computer Assisted Semen Analysis (Mira-9000 CASA)

Name : Mr. Tamer Ragab Ibrahim

Case no. : 201202218

### Dynamic Analysis Report (CASA - WHO 2010)

#### Dynamic Parameters Report ( I ) :

Classification	Conc. (million/ml)	Total number (million)	Percentage %
Tested sperm	<b>115.70</b>	<b>300.8</b>	<b>100</b>
Total motility (PR+NP)	86.60	225.2	<b>74.80</b>
Progressive motility (PR)	70.60	183.6	<b>61.00</b>
Non progressive (NP)	16.00	41.6	13.80
Immotile (IM)	29.20	75.9	25.20

\* Progressive motility (PR): spermatozoa moving actively, either linearly or in a large circle, regardless of speed.

\* Non-progressive motility (NP): all other patterns of motility with an absence of progression, i.e. swimming in small circles, the flagellar force hardly displacing the head, or when only a flagellar beat can be observed.

\* Immotile (IM): no movement.

#### Dynamic Parameters Report ( II ) :

VCL [ $\mu\text{m/s}$ ]	46.15	MAD[°]	45.83	LIN	62.50 %
VSL [ $\mu\text{m/s}$ ]	29.07	ALH [ $\mu\text{m}$ ]	4.54	WOB	71.97 %
VAP [ $\mu\text{m/s}$ ]	33.19	BCF [Hz]	4.70	STR	85.42 %

VCL : Curvilinear velocity

VSL : Straight line Velocity

VAP : Average Path Velocity

MAD : Mean Angular Degree

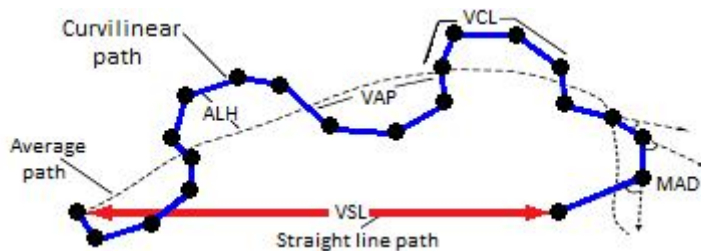
ALH : Amplitude of Lateral head Disp.

BCF : Beat-cross Frequency

LIN : Linearity (VSL/VCL)

WOB : Wobble (VAP/VCL)

STR : Straightness (VSL/VAP)



Sperm Tracks & Velocities

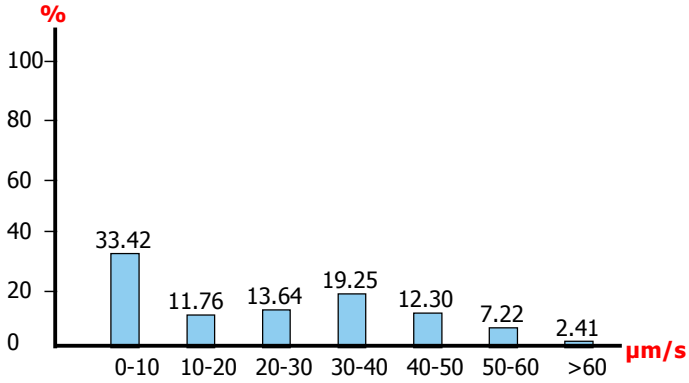
## Computer Assisted Semen Analysis (Mira-9000 CASA)

Name : Mr. Tamer Ragab Ibrahim

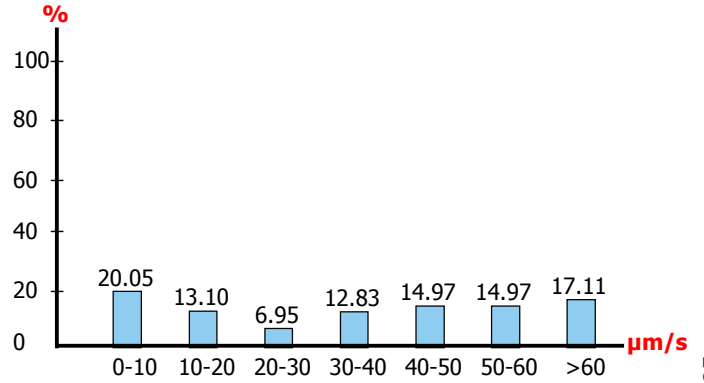
Case no. : 201202218

### Semen Analysis Charts (CASA - WHO 2010)

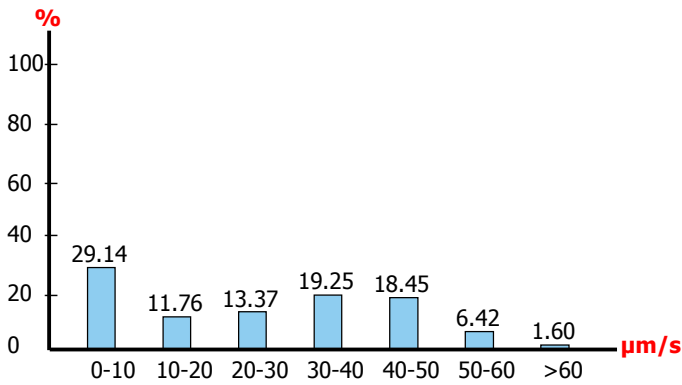
#### Progressive Velocity (VSL) :



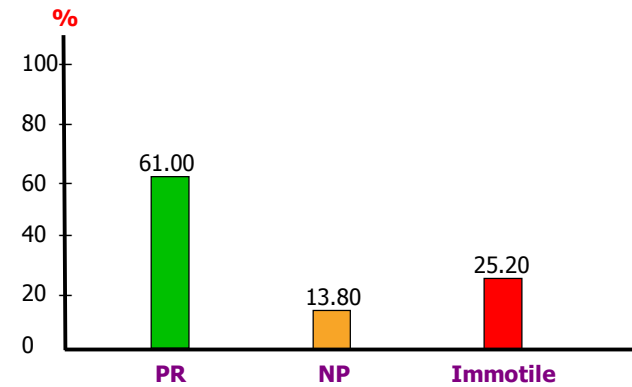
#### Track Speed (VCL) :



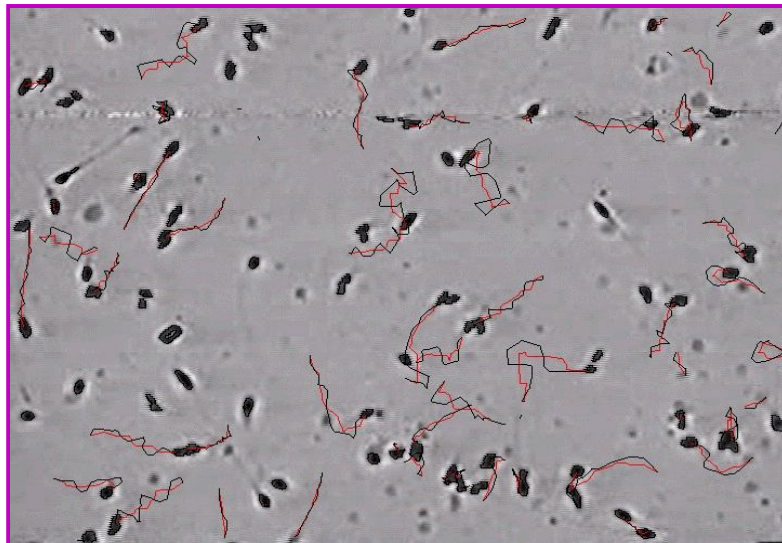
#### Path Velocity (VAP) :



#### Sperm Distribution :



#### Sperm Track Image



## Computer Assisted Semen Analysis (Mira-9000 CASA)

Name : Mr. Tamer Ragab Ibrahim

Case no. : 201202218

### Morphology Analysis Report (CASA - WHO 2010)

Normal Sperms (Morphology Index) : **20.00 %** ( PASSED )  $\geq 4\%$  is accepted  
Terato Sperms : **80.00 %**

#### A. Head Abnormality :

Big Head :	0 %
Small Head :	50 %
Tapered Head :	15 %
Pyriform Head :	10 %
Round Head :	0 %
Amorphous :	40 %
Vacuolated :	0 %
Small Acrosome :	0 %
Double Head :	0 %

#### B. Neck & Midpiece Abnormality :

Thin Neck :	0 %
Sharply Bent :	0 %
Thick or Irregular :	10 %
Asymmetrical insertion :	5 %

#### C. Principal piece (Tail) Abnormality :

Short Tail :	5 %
Bent Tail :	5 %
Multi-Tail :	0 %
Tail Break Down :	0 %
Coiled Tail :	0 %
Irregular Tail :	0 %

#### D. Excess Residual Cytoplasm (E.R.C.) :

E.R.C. : **5 %**

MAI : **1.75**

#### Multiple Anomalies Index (MAI) :

The mean number of anomalies per abnormal spermatozoon.

TZI : **1.23**

#### Teratozoospermic Index (TZI) :

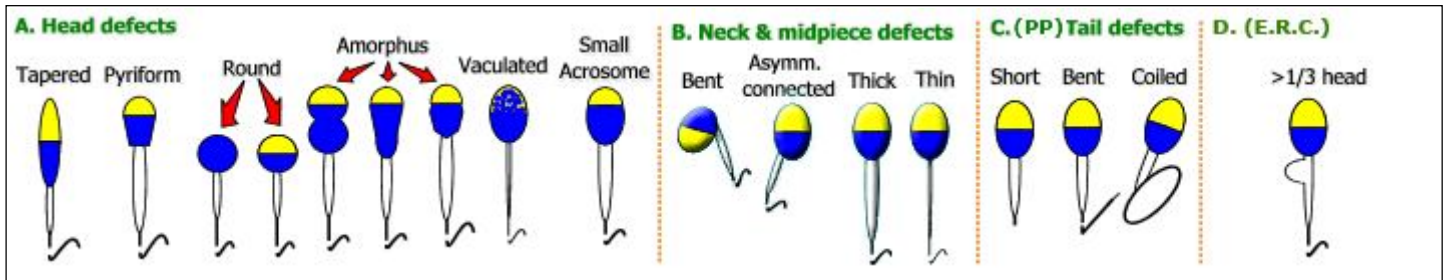
Total number of defects divided by the number of abnormal sperms.

SDI : **0.98**

#### Sperm Deformity Index (SDI) :

Total number of defects divided by the number of sperms counted.

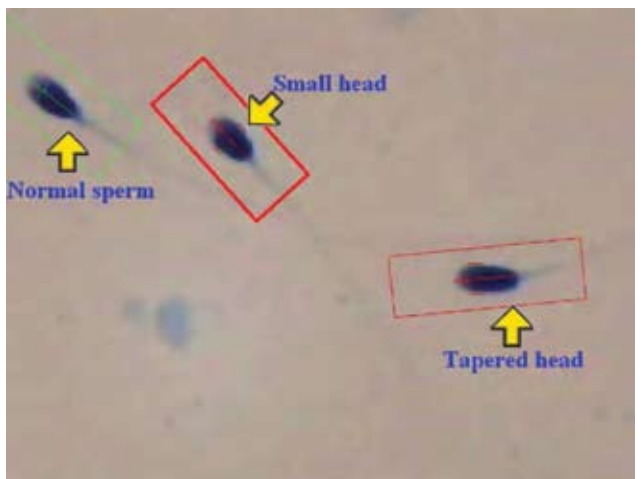
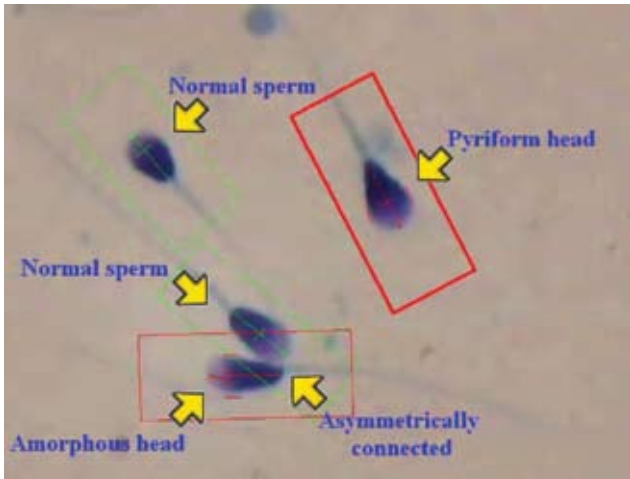
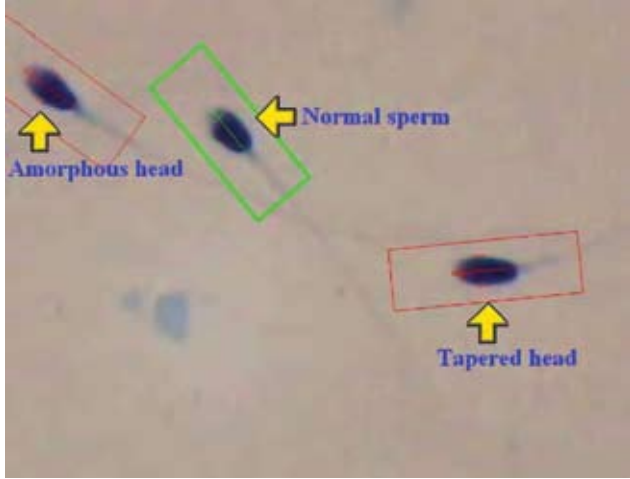
Class	Head Length (um)	Head Width (um)	Length/Width (%)	Head Area (um <sup>2</sup> )	Head Perimeter (um)	Acrosome (%)
Mean of Normal Sperm	4.46	2.31	1.94	8.09	11.55	22.30
Mean of Terato Sperm	4.17	2.33	1.82	7.58	11.00	19.02
Reference values	4 - 5.5	2.5 - 3.5	1.5 - 1.75	7.85 - 15.1	10.8 - 14.9	40 - 70



## Computer Assisted Semen Analysis (Mira-9000 CASA)

Name : Mr. Tamer Ragab Ibrahim

Case no. : 201202218



Normal sperm

Abnormal sperm

## ALRUBAIDI Medical Corporation

Sana'a - Zubairy Str. National Bank of Yemen Building  
Tel. +967 (1) 510119 - 510344 Fax: +967 (1) 510443



Sana'a - Saif Bin Theyazan Str.  
Next to Persdential Office  
Tel: +967 (1) 296182  
Fax: +967 (1) 296183

Hodeida - ALDAMGAH ALGadidah.  
Next to Military Hospital  
Tel: +967 (3) 214120  
Fax: +967 (3) 220392

Taiz - Street Allagenat  
Next to a mosque Eisaei  
Tel: 00967 (4) 259648  
Fax: 00967 (4) 259649