STUDY OF CERTAIN TESTS USED FOR ASSESSMENT OF SPERM QUALITY

Thesis
Submitted for partial fulfillment of
MD Degree in Dermatology and Venereology

By

Mohammed Abdel Naeim Sallam (M.B., B.Ch, & M.Sc., Ain Shams University)

54590

Supervised by

rof. Dr. Mohammed Farid Abdel Latif
Professor of Dermatology and Venereology

Faculty of Medicine, Ain Shams University

Prof. Dr. Tarif Hamza Sallam

Professor of Clinical Pathology Faculty of Medicine, Ain Shams University

M. A

Faculty of Medicine Ain Shams University

(1997)





لله ملك السموات والأرض يخلق ما يشاء يهب لمن يسَاء الناء الله علك السموات والأرض يخلق ما يشاء وينهب لمن يشاء وإنث وإنث وينهب لمن يشاء عقيما إنه عليم فحير "

صَدَقَ اللَّهُ العَـظِيـم

الآيتان ٤٩ ، ٥٠ من سورة الشـــوري

ACKNOWLEDGEMENT

I would like to express my deep gratitude and appreciation to **Prof. Dr. Mohammed Farid**, Professor of Dermatology and Venereology, Faculty of Medicine, Ain Shams University for his kind guidance, continuous encouragement and great help.

Special thanks are due to **Prof. Dr. Taref Hamza,** Professor of Clinical Pathology, Faculty of Medicine, Ain Shams University, for his careful supervision, valuable remarks and constructive criticism.

I would like also to thank **Dr. Nahla Zakaria**, Lecturer in Clinical Pathology, Faculty of Medicine, Ain Shams University for her valuable help in assessment of acridine organge staining by fluorescence microscope.

Lastly, I would like to thank all members of the Dermatology and Venereology Department, Ain Shams University.

ABBREVIATIONS

AB = Aniline blue

ALH = Amplitude of lateral head displacement

AO = Acridine orange
AR = Acrosome reaction

ASMA = automated sperm morphology analylysis

ATP = Adenosine triphosphate

cAMP = Cyclic adenosine monophosphate

Ca⁺⁺ = Calcium

CASA = Computer aided semen analysis

CK = Creatine kinase
CM = Cervical mucus
CTC = Chlortetracycline

ELISA = Enzyme linked immuosorbent asay

ESC = Effective sperm count

HEW = Hen's egg white

HOS = Hypoosmotic swelling

HZA = Hemizona assay

IVF = In-vitro fertilization

K+ = Potasium
Na+ = Sodium

PCT = Post-coital test
RIA = Radioimmunoassay

ROS = Reactive oxygen species
SCI = Sperm capacitation index

SCMPT = Sperm cervical mucus penetration test

X = Mean

ZP = Zona pellucida



LIST OF TABLES

Fable	(1):(108) Descriptive data of group I
	(2):(112) Descriptive results of group II
rable	(3):(113) Comparison between the results of group I and group II
	(4):(118) Descriptive data of group III
	(5):(119) Comparison between the results of group I and III
ľable	(6):(121) Comparison between the results of group II and III

Lists of Tables & Figures (a)

LIST OF FIGURES

Fig.	(1): (4) The structure of the human spermatozoon
Fig.	(2):(7) The human spermatozoon
Fig.	(3):(9) Diagramatic illustration of head of human spermatozoon
Fig.	(4):(11) Various microtubular elements and matrix components of axoneme of typical flagellum
Fig.	(5):(13) Organization of middle piece (above) and principal piece (below) of human sperm tail.
Fig.	(6):(22) The sequence of events for the acrosome reaction
Fig.	(7):(24) Mammalian ovum.
_ _ 7 	
	Lists of Tables & Figures (b)

Central Library - Ain Shams University

Fig.	(8):(30) Schematic representation of typical morphological changes of human spermatozoa subjected to hypoosmotic stress
Fig.	(9):(60) Calculation of velocity parameters for computer assisted semen analysis
Fig.	(10):(70) The True-Tax assay system
Fig.	(11):(87) Makler Chamber
Fig.	(12):(98) Hypoosmotic swelling test. Ballooning of the tail end is apparent. Geimsa stain (400X)
Fig.	(13):(99) Hypoosmotic swelling test. Geimsa stain (1000X)
Fig.	(14):
Fig.	(15):

Lists of Tables & Figures (c)

'ig.	(16):
'ig.	(17):(103) Acridine orange staining. Mature nuclei are green, while immature nuclei are orange to red (400X)
'ig.	(18):(123) Comparison between the studied groups as regard semen volume
ig.	(19):(124) Comparison between the studied groups as regard sperm count
ig.	(20):
ig.	(21):(126) Comparison between the studied groups as regard the results of hen's egg white penetration
ig.	(22):

Lists of Tables & Figures (d)

Fig.	(23):(128) Comparison between the studied groups as regard the percentage of unstained "mature" sperms' heads in AB staining.
Fig.	(24):(129) Comparison between the studied groups as regard the percentage of green "mature" sperms' heads in AO staining.
Fig.	(25):(130) Comparison between the studied groups as regard acrosine assay.
Fig.	(26):
Fig.	(27):(134) Correlation between egg white penetration and total percentage of motility in all studied cases.
Fig.	(28):
Fig.	(29):(13 Correlation between egg white penetration and viability percentage in all studied cases.

Lists of Tables & Figures (e)