AinShams Universty
Faculty of Science
Chemistry Department

Clinical Utility of Serum Glycodelin as a Novel Marker for Ovarian Cancer

Thesis Submitted by

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(M.Sc. in Chemistry 2009)

In the Fulfillment of the requirements for a (Ph. D) degree in Analytical Chemistry

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Chemistry Department

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانكَ لاَ علِمَ لَنَا إِلاّ مَا
عَلّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

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Mohamed hegab

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List of Abbreviations

α	Alph
β	Beta
AFP	Alpha fetoprotein
AJCC	American Joint Committee on Cancer
AML	Acute myeloid leukemia
AUC	Area under curve
AUP	α-uterine protein
BRCA	Breast cancer susceptibility gene 1
BRCA	Breast cancer susceptibility gene 2
brp-39	Breast regressing protein 39
bp	(base-pair)
bpy	2,2-bipy
CA-125	Cancer antigen 125
CA15-3	Carbohydrate antigen15-3
CA19-9	Carbohydrate antigen19-9
CASA	Cancer associated serum antigen
CAG-2	chorionic α2-microglobulin
CBC	Complete blood picture
CD	Cluster differentation

cDNA	Complementary deoxyribonucleic acid
CEA	Carcinomabryonic antigen
CT	Computed Tomography
CAG	chorionic α2-globulin
DNA	Deoxyribonucleic acid
ECLIA	Electrochemiluminescence immunoassay
EDTA	Ethylene Diamine Tetra actetic Acid
ELISA	Enzyme linked immunsorbant assay
ER	Estrogen receptor
EGFR	epidermal growth factor receptor
ErbB-1	epidermal growth factor receptor B-1
FIGO	International Federation of Gynecology and Obstetrics
FISH	Flourescent In Situ Hybridization
GdA	glycodelin-A
GdC	glycodelin-C
GdF	glycodelin-F

GdS	glycodelin-S
HC	Human Cartilage glycol-protein-39
gp39	
HCG	Human chorionic gonadotropin
HER2	Human epidermal growth factor receptor 2
HIV	Human Immunodeficiency Virus
hk	Human kallikrein
IAP	Immunosuppressive acid protein
IL	interleukin
IR	Interquartile range
IVF	In Vitro Fertilization
kDa	Kilo Daltons
LDH	Lactate dehydrogenase
LGLs	large granular lymphocytes
LPA	Lysophosphatidic acid
mAb	monoclonal antibodies
MCF-7	Macrophage colony factor
MCS-F	Macrophage colony stimulating factor
MRI	Magnetic Resonance Imaging

MLH	Mutl-homolog gene
MSH	Melanocyte- Stimulating harmone
MMAC	Multiply accumulates gene
mRNA	Messenger ribonucleic acid
n	Number
NAD	β-nicotinamide adenine dinucleotide
NADH	Reduced β- nicotinamide adenine dinucleotide
NK	natural killer
PAEP	progesterone-associated endometrial protein
PC	Prostate carcinoma
P53	tumor suppressor gene
PCOS	Polycystic ovarian syndrome
α2-PEG	pregnancy-associated α2-microglobulin
PCR	Polymerase chain reaction
PEP	progesterone-associated endometrial protein
PET	Positron emission tomography
PMS	Premenstrual Dysphoric Disorder

PP14	placental protein 14
PR	Progesterone receptor
PTEN	Phosphatase and Tenis Homolog gene
RIA	Radioimmunoassay
RNA	Ribonucleic acid
r_s	Spearman's Rank correlation coefficient
RTK	Receptor tyrosine kinase
RT-PCR	Reverse transcriptase polymerase chain reaction
ROC	Receiver operating characteristic
RU	**:** ruthenium
SD	Standard deviation
SSO,S	Sequence -specific oligonucleotides
TAG	Tumor associated glycoprotein
TATI	Tumor- associated trypsin inhibitor
TEP	Total Extraperitoneal Inguinal hernia repair gene
T.N.M	Tumor Size, Node Involvement, Metastasis Status
TPA	tripropylamine
U/S	Ultrasound
WHO	World Healthy Organization

Referees Decision

Title: "Clinical Utility of Serum Glycodelin as a Novel Marker for Ovarian Cancer"

Presented by: Mohamed Samir Abd Allah Mahmoud Hegab

Referees

	Name	Position	Signature
1	**Prof. Dr./ Raga El Sheikh Sheb**	**Professor of Analytical chemistry,Faculty of Science, Zagazig University Professor of**	
2	**Prof. Dr. / Ibrahim Hosiny Ali Badr**	**Professor of Analytical chemistry, Faculty of Science, Ain shams University**	
3	**Ass.Prof. Dr./ Nermine Helmy Mahmoud**	**Assistant Professor of Clinical and Chemical Pathology, Faculty of Medicine, Ain Shams University.**	

Date of Discussion:

Degree of Discussion:

Head of Chemistry Department

Prof. Dr. Maged Shafik Auntonious Nakhla

INTRODUCTION

Ovarian cancer is considered the most challenging gynecological malignancy as it represents the fifth most frequent female cancer type and the fourth most frequent cause of death from cancer ***(Hogdall et al., 2003)***. Approximately 70% of ovarian cancer is diagnosed in an advanced stage and only 35% of patients survive for 5 years, with mortality rate largely unchanged for many years ***(Crijns et al., 2009).***

CA- 125 was the first tumor marker available for detection of ovarian cancer but the major problem is its poor sensitivity and specificity as it is elevated in only 40% - 50% of patients with stage I and II ovarian cancer and can be detected also in benign conditions as pregnancy, endometriosis, ovarian cyst and liver cirrhosis ***(Dupont et al., 2004).***

Glycodelin is the major lipocalin protein of the reproductive axis. Glycodelin has many immunosuppressive, contraceptive and morphogenic properties ***(Alok and Karande, 2009).*** Glyodelin has by many names in the literature including placental protein 14 (PP14), chorionic α2-microglobulin (CAG-2), progesterone-associated endometrial protein (PEP), and pregnancy-associated α2-microglobulin (α2-PEG) ***(Yeung et al., 2009).*** Glycodelin had been originally purified from human term placenta and its adjacent membranes, and it was thought to be pregnancy specific. Because it was evident, that human endometrium was its major source, the name progesterone-

associated endometrial protein was suggested ***(Alok and Karande, 2009).*** However, Glycodelin is not exclusive to the endometrium as it was detected in the normal human ovary and was localized to areas of stromal cell condensation in ovarian cortex, theca interna and the granulosa in the follicular phase, and to the theca interna of the corpus luteum and luteinized granulosa cells, corpus albicans and the Leydig cells of the ovarian hilus in the luteal phase ***(Bersinger et al., 2009)***.