



The Role of Uroplakin IIIA (UPIIIA) Gene and its Protein in the Diagnosis of Bladder Cancer

*Thesis Submitted to Faculty of Science,
Ain Shams University*

In partial Fulfillment of M.Sc. in Biochemistry

BY

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Approval Sheet

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿ قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا

إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ ﴾

صدق الله العظيم
الآية (32) سورة البقرة



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Finally, my truthful affection and love to my husband, my family, who were, and will always be by my side all my life.



Fatma Mahmoud Abdelwahed Mohamed

Declaration

***I declare that this thesis has been
composed by me and it has not been
submitted before for a degree at this or
any other university.***

FATMA MAHMOUD ABDELWAHED



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Abstract

The Role of Uroplakin IIIA (UPIIIA) Gene and its Protein in the Diagnosis of Bladder Cancer.

Background: Advanced bladder cancer is an aggressive malignancy with a poor prognosis. Despite precise pathologic staging and grading, prediction of clinical outcomes in patients is very difficult. Uroplakins are urothelial differentiation-related membrane proteins, they represent major urothelial cyto-differentiation products and are highly conserved during mammalian evolution.

Objective: To evaluate the role of uroplakin IIIA as a potential diagnostic and / or prognostic predictor marker for metastasis of bladder cancer patients.

Methods: A total of 106 subjects: 61 bladder cancer patients, 20 benign cases, 25 healthy subjects, were enrolled in the present study. Patients were observed for 3 years postoperative. UPIIIA mRNA level was detected in blood using q-PCR, and in urine by conventional PCR, while urinary UPIIIA protein was measured using ELISA.

Results: At baseline, before cystoscopy, blood UPIIIA mRNA was significantly higher in the metastatic patients as compared with controls, patients with benign lesions, and non

metastatic cancer ones ($p < 0.015$, 0.02 , and 0.03 ; respectively). Urinary UPIIIA protein was significantly higher in patients who developed metastasis within the 3 years observation period from the time of surgery.

Conclusion: The results suggest that UPIIIA may provide a feasible non-invasive tool for differential diagnosis and prediction of metastasis in bladder cancer.

Key words: bladder cancer, UPIIIA, metastasis.

List of Abbreviation

Abbreviation	Description
<i>APC</i>	Adenomatous polyposis coli
<i>ARF</i>	Alternate open reading frame
<i>ASR</i>	Age Specific incidence Rate.
<i>AUM</i>	Asymmetric unit membrane
<i>Bax</i>	BCL2-associated X protein
<i>BCG</i>	Bacillus calmette guerin
<i>BCL-2</i>	B-cell lymphoma 2
<i>BTA</i>	Bladder tumor associated antigen
<i>BTA</i>	Bladder tumor antigen
<i>CASP8</i>	Caspase-8
<i>CD</i>	Cluster of differentiation
<i>CDH1</i>	Cadherin-1
<i>CDH13</i>	Cadherin-13
<i>CDK</i>	Cyclin-dependent kinases

List of Abbreviation

<i>CDKAL</i>	CDK5 regulatory subunit associated protein 1-like 1
<i>CI</i>	Confidence interval
<i>CIS</i>	Carcinoma in situ
<i>CK20</i>	Keratin 20
<i>CT</i>	Computed tomography
<i>DBC2</i>	Deleted in breast cancer2
<i>DBCCR1</i>	Deleted in bladder cancer chromosomal region 1
<i>DVs</i>	Discoidal vesicles
<i>EAU</i>	European Association of Urology
<i>EGFR1</i>	Epidermal growth factor receptor 1
<i>ER</i>	Endoplasmic reticulum
<i>ERCC4</i>	Excision repair cross-complementing group 4
<i>ERK</i>	Extracellular signal-regulated kinases
<i>EST</i>	Expressed sequence tag
<i>FASL</i>	Fas ligand
<i>FDA</i>	U S Food and Drug Administration
<i>FGFR</i>	Fibroblast growth factor receptor