The Value of Fecal M2PK in Colorectal Cancer

Thesis

Submitted For Partial Fulfillment of Master Degree
in Tropical Medicine

By

Hani Ezzat Sadik

(M.B., B.Ch)

Under Supervision of

Professor/ Hisham Khalil Dabbous

Professor of Tropical Medicine
Faculty of Medicine
Ain Shams University

Professor/ Yosry Abd El-Rhaman Mohammed

Professor of Tropical Medicine
Theodor Bilharz Research Institute

Doctor/ Runia Fouad EL- Folly

Assistant Professor of Tropical Medicine
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
2016

سورة البقرة الآية: ٣٢


وأنزل الله عليك
الكتاب والحكمة
وعلَّمَكَ مَا لَمْ تَكُن
تَعْلَمُ وكَانَ فَضْلُ
اللَّهِ عَلَيْكَ عَظِيماً
صدق الله العظيم
سورة النساء الآية (١١٣)

Acknowledgments

First and foremost, praise and thanks must be to **ALLAH**, *Who guides me throughout life.*

I would like to express my deepest gratitude and thanks to **Prof. Dr. Hisham Khalil Dabbous,** *Professor of Tropical Medicine, Faculty of Medicine, Ain Shams University for his kind continuous encouragement and great support throughout the work. It was a great honor to be a student working under his supervision.*

I am also greatly indebted and grateful to **Prof. Dr. Yousry Abd El Rahaman Mohamed,** *Professor of Hepatology and Gastroenterology, Theodor Bilharz Research Institute, for his great help, valuable time, careful supervision and continuous advices and his efforts that made this work come to light.*

I am also greatly indebted to **Dr. Runia Fouad El-Folly,** *Assistant Professor of Tropical Medicine, Faculty of Medicine, Ain Shams University, it was impossible for me to finish this work without her wise instructions and guidance. No words would ever fulfill my deepest gratitude towards her support.*

Also I am really deeply grateful to **Dr. Mohammed Darwish,** *Assistant Professor of Hepatology and Gastroenterology, Theodor Bilharz Research Institute, for his careful and great support.*

I am really thankful to endoscopy unit of Hepatology and Gastroenterology department and Pathology department, Theodor Bilharz Research Institute who took part in exhibiting this work to light.

Candidate

Hani Ezzat Sadik

List of Contents

List of Abbreviations

Abbr.	Full-term
ACG	**:** American College of Gastroenterology
AGA	**:** American Gastroenterological Association
APC	**:** Adenomatous polyposis coli
ASGE	**:** American Society for Gastrointestinal Endoscopy
ATP	**:** Adenosine triphosphate
AVMs	**:** Arteriovenous Malformations (AVMs)
BMP3	**:** Methylated Bone Morphogenetic Protein 3
BMPR1A	**:** Bone morphogenetic protein receptor, type IA
BRAF	**:** v-Raf murine sarcoma viral oncogenes homolog B1
BSG	**:** British Society of Gastroenterology
CD	**:** Crohn's colitis
CIMP	**:** CpG island methylator phenotype
CRC	**:** Colorectal cancer
CT	**:** Computed tomography
CTC	**:** Computed tomography colonography
DALM	**:** Dysplasia Associated Lesion or Mass
DCBE	**:** Double contrast barium enema
DCC	**:** Deleted in cancer colon
DNA	**:** Deoxy Ribonucleic acid
EDTA	**:** Ethylenediaminetetraacetic acid
ERUS	**:** endorectal ultrasonography
ESD	**:** Endoscopic sub-mucosal dissection
FS	**:** Sigmoidoscopy

FAP : Familial adenomatous polyposis
FIT : Fecal immunochemical tests
FOBTs : Fecal occult blood tests
gFOBT : Guaiac-based Fecal occult blood tests
GISTs : Gastro-intestinal stromal tumors
GIT : Gastro intestinal tract
HHT : Hereditary Hemorrhagic Telangiectasia
HIF1 : Hypoxia-Inducible Factor (HIF)-1
hMLH1 : Human MutL Homolog 1
hMLH3 : Human MutL Homolog 3
HMPS : Hereditary mixed polyposis syndrome
hMSH2 : Human MutS Homolog 2
hMSH3 : Human MutS Homolog 3
hMSH6 : Human MutS Homolog 6
HNPCC : Hereditary Non-Polyposis Colorectal Cancer
HNSCC : Head and Neck Squamous Cell Carcinoma
HPV-16 E7 : Human Papiloma Virus Type 16 E7 protein
IARC : International Agency for Research on Cancer
IBD : Inflammatory bowel disease
Kras : Kirsten rat sarcoma viral oncogene homologue
L PK : Liver pyruvate kinase
M1PK : Muscle pyruvate kinase
M2PK : M2Pyruvate Kinase
MHC : Major Histocompatibility Complex
MLH1 : MutL Homolog 1
MRC : Magnetic resonance colonography

MSH2 **:** MutS Homolog 2

MSH6 **:** MutS Homolog 6

MSI **:** Microsatellite instability

MSI-H **:** High-frequency microsatellite instability

MUC **:** Mucosal Ulcerative Colitis

MYC **:** Myc proto-oncogene protein

NBI **:** Narrow-band imaging

NCI **:** National Cancer Institute

NDRG4 **:** NDRG family member 4

NHL **:** Non Hodgkin lymphomal

NIR AF **:** near-infrared autofluorescence

NSAID **:** Non Steroidal Anti Inflmmatory Drugs

P53 **:** Protein 53

PEP **:** Phosphoenolpyruvate

PHTS **:** PTEN hamartomatous tumor syndromes

PILLcam **:** PillCam Capsule Endoscopy

pp60v-src kinase : pp6Ov-src tyrosine kinase

PSC **:** Primary sclerosing cholangitis

PTEN **:** phosphatase and tensin homolog protein

R PK **:** erythrocyte pyruvate kinase

SMAD2 **:** SMA protein- mothers against decapentaplegic 2

SMAD3 **:** SMA protein- mothers against decapentaplegic 3

SMAD4 **:** SMA protein- mothers against decapentaplegic 4

SMAD4 **:** SMA protein- mothers against decapentaplegic 4

Sp1 **:** specificity protein 1

SPS **:** Serrated polyposis syndrome

SSAs : Sessile Serrated Adenomas

STK11 : Serine/threonine kinase 11

TAC-IRA : total abdominal colectomy with ileorectal anastomosis

TGF- β : Transforming growth factor-β

TSAs : Traditional Serrated Adenomas

UC : Ulcerative colitis

List of Tables

Table No.	Title	Page No.

Tables in Review

List of Tables *(Cont.)*

List of Figures

Figure No.	Title	Page No.

Figures in Review

List of Figures

The Value of Fecal M2PK in Colorectal Cancer

Thesis

Submitted For Partial Fulfillment of Master Degree

In Tropical Medicine

By

Hani Ezzat Sadik

(M.B., B.Ch)

Supervisors

Prof. Hisham Khalil Dabbos, MD
Professor of Tropical Medicine
Faculty of Medicine
Ain Shams University

Prof. Yosry Abd El-Rahman Mohamed, MD
Professor of Tropical Medicine
Theodor Bilharz Research Institute

Dr. Runia Fouad El-Folly, MD
Assistant professor of Tropical Medicine
Ain Shams University

Faculty of Medicine

Ain Shams University

2015