

Immunohistochemical Expression of Beta-Catenin in Colorectal Adenocarcinoma

Thesis

*Submitted for partial fulfilment of Master degree in
Pathology*

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بسم الله الرحمن الرحيم

[قالوا سبحانك لا علم
لنا إلا ما علمتنا إنك
أنت العليم الحكيم]

صدق الله العظيم

سورة البقرة

آية ٣٢

DEDICATION

*To my beloved husband and my two
beautiful children*

Leena & Yahya

*To soul of my father, mother, and sisters
who gave me a lot of care, support during my
whole life and until now*

*To soul of my father, who encouragedd me a
lot to finish this work*



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LIST OF ABBREVIATIONS

AJCC	American Joint Committee for Cancer
APC	Adenomatous Polyposis Coli
BMI	Body Mass Index
CIMP	CpG Island Methylator Phenotype
CIN	Chromosomal Instability
COX-2	Cyclooxygenase-2
CRA	Colorectal Adenoma
CRC	Colorectal Cancer
CTNNB1	Human Genome Organization-approved official gene symbol; catenin (cadherin-associated protein), $\beta 1$
DCC	Deleted in Colorectal Cancer
FAP	Familial Adenomatous Polyposis
HNPCC	Hereditary NonPolyposis Colorectal Cancer
IBD	Inflammatory Bowel Disease
LOH	Loss of Heterogenicity
MCC	Mutated in Colorectal Cancer
MMR	Mismatch Repair Genes

MSI	Microsatellite Instability
MSS	Microsatellite Stable
NCI	National Cancer Institute
RER	Replication Error
UICC	International Union for Cancer Control
WHO	World Health Organization

INTRODUCTION

Colorectal cancer is the fourth commonest malignant neoplasm after lung, breast and prostate; approximately 90% of colorectal cancers are derived from benign adenomatous lesions which are estimated to take 5–15 years to evolve into invasive cancer (*Watson, 2006*).

Colorectal cancer is the third leading cause of cancer deaths in Western countries. Between 20% and 50% of patients with colorectal cancer will die within five years of diagnosis, usually as the result of extensive metastatic disease. At the time of diagnosis, 20% of patients have metastases in the liver, the predominant metastatic site for colorectal cancer (*Backus et al, 2002*).

Beta-catenin is a component of stable cell adherent complexes whereas its free form functions as a transcription factor that regulate genes involved in oncogenesis and metastasis (*Xiao et al, 2003*).

Beta-catenin has two distinct functions, namely, maintaining cell-to-cell adhesion and mediating the Wnt/beta-