شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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Cairo University
Faculty of Science

BIOCHEMICAL STUDIES ON THE EFFECT OF TURMERIC ON BREAST CANCER OF RATS

Presented by

Rania Mortada Mahmuod Mahmuod
(B.Sc. 2006)

Thesis Submitted for Partial fulfillment of Master Degree in Biochemistry

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2010

Abstract

Name: Rania Mortada Mahmod Mahmod

Title of Thesis: - Biochemical Studies On The Effect Of Turmeric On Breast Cancer Of Rats.

In this study, we investigated the anti-tumor potential of turmeric for 120 days against injected intraperitoneally a single dose of (10 mg/rat) 7, 12-dimethylbenz (a) anthracene (DMBA)-induced oxidative stress and mammary carcinogenesis in female rats. The treatment protocol started from the day immediately after DMBA admission. Results indicated that administration of DMBA was associated with development of mammary carcinoma, elevated levels of markers of tumorigenicity, endocrine derangement, and oxidative stress, which ameliorated with the administration of 5% turmeric of rat's diet. It has been demonstrated that their ability to minimize the frequency of DMBA-induced carcinomas, decrease the deleterious endocrine derangement and decrease the level of detrimental oxidative stress. These findings suggest possible protective and therapeutic implications in mammary carcinogenesis. In conclusion, these results suggested that supplementation of diet with turmeric provided antioxidant defense with strong chemo preventive activity against DMBA-induced mammary tumors.

Keywords: Breast cancer, curcumin, nitric oxide, malondialdehyde, CEA, TSA, estradiol

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I never forget sacrifice given by my mother, father, sisters, brothers, and no words can express my gratitude to my husband for his never ending support and care.

LIST OF ABBREVIATION

AhR	aryl hydrocarbon receptor
AMC	Atypical Medullary Carcinoma
AP-1	Activating protein-1
ATPase	Adenosine triphosphatase
BDMC	Bisdemethoxycurcumin
b-FGF	basic fibroblast growth factor
CEA	Carcinoembryonic antigen
COX-I	Cyclooxygenase-I
COX-II	Cyclooxygenase-II
DBM	dibenzoylmethane
DCIS	Ductal carcinoma in situ
DES	Diethylstilbestrol
DMBA	7,12-dimethylbenz[a]anthracene
DMC	Demethoxycurcumin
DMSO	Dimethyl Sulfoxide
DNA	Deoxy ribonucliec Acid
E2	Estradiol
EGF	Epidermal growth facto
EGFRK	Epidermal growth factor receptor- kinases
ELISA	Enzyme-linked immunosorbent assay
ERK	Extracellular receptor kinase
ERα	Alpha Estrogen Receptor
ERβ	Beta Estrogen Receptor
FDA	Food and Drug Administration
FPTase	Farnesyl-protein transferase

GCL	Glutamyl cysteine ligase
GPx	Glutathione peroxidase
GSH	Glutathione reduced
GSH	Glutathione
GSSG	Glutathione oxidized
GST	Glutathione S-Transferases
H&E	Haematoxylin and eosin
HDS1	Dehydrogenase type 1
HER-2	Human epidermal groth factor receptor-2
HGF	Hepatocyte growthfactor
HRP	Horseradish peroxidase
HRT	Hormone replacement therapy
IBC	Inflammatory breast cancer
IDC	Invasive ductal carcinoma
IGF-1	Insulin-like growth factor-1
IL	Interleukin
IL-2	Interleukin-2
IL-8	Interleukin-8
ILC	Infiltrating lobular carcinoma
IMC	Invasive micropapillary carcinoma
iNOS	Inducible nitric oxide oxidase
JAK	Janus kinase
JNK	C-Jun N-terminal kinase
LOX	Lipoxygenase
MC	Medullary carcinoma
MCP	Monocyte chemoattractant protein
MDA	Malondialdehyde

MDR	Multidrug-resistant
MIP	Macrophage inflammatory protein
MMP	Matrix metalloproteinase
mRNA	Messenger Ribonucliec Acid
MRP2	Multidrug resistance-associated protein 2
MSA	Methylseleninic acid
N.S	Non significant
NANA	N-acetylneuraminic acid
NF-κB	Nuclear Factor-κB
NGF	Nerve growth factor
NNMT	Nicotinamide N-methyltransferase
NO	Nitric oxide
NQO	Dehydrogenase quinine
NRF-2	Nuclear factor 2-related factor
ODC	Ornithine decarboxylase
ppm	Parts per million
PAHs	Polycyclic Aromatic Hydrocarbons
PDGF	Platelet-derived growth factor
PDR	Physicians Desk Reference
PE	Phytoestrogen
PKC	Protein kinases
PPAR-γ	Peroxisome proliferator-activated receptor-gamma
RBCs	Red Blood Cells
RNA	Ribonucliec Acid
ROS	Species Reactive Oxygen
S.D	Standard deviation
S.E	Standard error

SA	Sialic Acid
SCC	Squamous cell carcinoma
SOD	Superoxide dismutase
STAT3	Signal transducers and activators of transcription
TBA	Thiobarbituric acid
TBARS	Thiobarbituric acid reactive species
TC	Tubular carcinoma
TCA	Trichloroacetic acid
TDLU	Terminal ductal lobular unit
THC	Tetrahydrocurcumin
TIM	tissue inhibitor of metalloproteinase
TIMP-1	Tissue inhibitor of metalloproteinase-1
TMB	3, 3′, 5, 5′ tetramethylbenzidine
TNF	Tumor necrosis factor
TNF-α	Tumor necrosis factor – alpha
TSA	Total Sialic Acid
VEGF	vascular endothelial growth factor