شبكة المعلومات الجامعية

بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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التوثيق الإلكتروني والميكروفيلم

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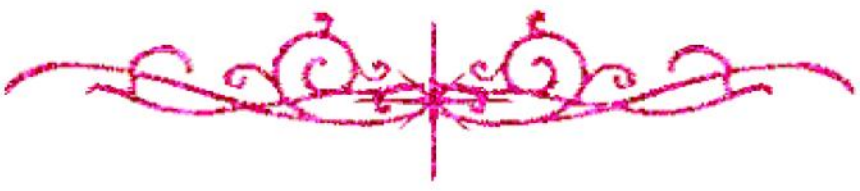

بالرسالة صفحات
لم ترد بالأصل

The Potential Anti Breast Cancer Effect of Curcumin and Zinc Nanoparticles in Female Rats

A thesis Submitted to Faculty of Science, Ain Shams University for Partial Fulfillment of Master degree of Science in Biochemistry

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صدق الله العظيم،،،

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Abstract

Cancer is an aggressive disease contributing strongly in deaths around world. Breast cancer is one of the most common causes of death in females. Although there are many breast cancer therapeutic stratigies, they either have limitations or sometimes be resisted by the cancer cells, so new approaches in that field are needed to tackle those restrictions. Nanotechnology plays an exciting role in diagnosis and treatment of cancer, especially breast cancer. The main object of this study was to investigate the effect of the newly synthesized zinc oxide nanoparticles coated by curcumin (Cu-Zno NPs) on the induced mammary gland carcinogenesis in female rats by 7,12-Dimethylbenz(a)anthracene (DMBA).

The antitumor efficacy of Cu-Zno NPs was conducted both *in vitro* and *in vivo. In vitro* study showed that Cu-Zno NPs inhibited human breast cancer cell line (MCF-7) proliferation with IC**50 of** 122 4.1 μg/ml. while *In vivo study*, the administration of Cu-Zno NPs to DMBA-treated rats ameliorated the hyperplastic state of mammary gland carcinogenesis induced by DMBA. Additionally, Cu-Zno NPs administration significantly modulated the activities of ALT and AST, as well as the levels of urea and creatinine in serum. Also Cu-Zno NPs administration improved the antioxidant state by increasing SOD activity and GSH content,

accompanied with decreasing MDA content in the mammary tissue.

Also, Cur-ZnONPs enhance the apoptotic activity through elevating the levels of caspase-3 and decreasing the protein expression of AKT & PI3K. Furthermore, a significant decrease in serum TIBC. Mild recurrence of normal mammary gland tissue was histopathologically appeared. Hence, it can be concluded that Cu-Zno NPs could be a promising adjuvant to the conventional breast cancer therapies.

List of Abbreviations

ACS	American Cancer Society
ANOVA	Analyzed Using One way analysis of Variance
BAX	Bcl-2-associated X protein
BC	Breast cancer
CAT	Catalase
COX2	Cyclooxygenase-2
Cur	Curcumin
Cur-ZnONPs	Curcumin-Zinc Oxide Nanoparticles
DLS	Dynamic light scattering
DMBA	7,12-Dimethylbenz(*a*)anthracene
Fe	Iron
Fe^{+3}	Ferric iron
GPx	glutathione peroxidase
GSH	Reduced Glutathione
GSSG	Glutathione disulfide
IC_{50}	Inhibitory Concentration
LD_{50}	Median lethal dose
MAPK	Mitogen- activated protein kinase
MCF-7	Michigan cancer foundation-7
MDA	Malondialdehyde
MTT	3-[4,5-dimethylthiazole-2,5 diphenyltetrazolium bromide
NF-KB	Nuclear Factor KaPPa B
NPs	Nanoparticles
PKB	protein kinase B
(AKT)	The "Ak" was a temporary classification name for a mouse that developed spontaneous thymic lymphomas. The "t" stands for 'thymoma';
PI3K	Phosphatidylnositol 3- Kinase
Pt	Platinum
R	Reagent
R.P.M	Rounds Per Minute
RES	Response elements
ROS	Reactive Oxygen Species
RTKs	receptor tyrosine kinases
S.D	standard deviation