بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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MONA MAGHRABY

Ain Shams University
Faculty of Science

Anti-Angiogenic Efficacy of Chitosan Nanoparticles as Drug Delivary on Mice Bearing Ehrlich Carcinoma and Subjected to γ-Irradiation

A Thesis

Submitted for the Degree of Master of Science As a Partial Fulfillment for Requirements of the Master of Science in Zoology

By

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Thesis Entitled

Anti-Angiogenic Efficacy of Chitosan Nanoparticles as Drug Delivary on Mice Bearing Ehrlich Carcinoma and Subjected to γ-Irradiation

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Dedication

I dedicate this work with all my love
to my family and for all my friends
and those from whom I have learned,
whenever and wherever they are

Huda said

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ABSTRACT

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Chitosan nanoparticles (CNPs) is used as drug carrier for 5-fluorouracil (5-FU). Low doses of γ-irradiation may reveal a novel therapeutic tool for cancer treatment. In this study, the effects of 5FUCNPs and /or low doses of γ- irradiation on tumor neovascularization growth were investigated using a model of female mice bearing solid Ehrlich carcinoma (EC) in the neck region. After 7 days for solid tumor induction 5FUCNPs were administrated via gavages to mice for a period of 15 consecutive days at dose of 0.5 mg/kg/body weight and/or low doses of γ- Irradiation (0.25 Gy x2/Week for two weeks). Tumor size was monitored, oxidative stress markers glutathione (GSH) and lipid peroxidation (LPO) were assessed and histopathological changes and necrotic examination in tumor, liver, kidney and spleen tissues were studied . In addition, the angiogenic markers vascular endothelial growth factor (VEGF), tumor necrosis factor (TNF- α) and platelet -derived growth factor (PDGF) levels were evaluated. The results of the present work showed that EC-bearing group recorded uncontrolled tumor growth, increased in angiogenic levels (VEGF and PDGF), TNF-α, LPO and depressed in tumor apoptosis and hepatic, renal and splenic oxidative stress marker (GSH). On the other hand, 5FUCNPs combined with γ-irradiation treatment, significantly reduced tumor size, depressed the concentrations of angiogenic markers,

decreased TNF-α, elevated tumor apoptosis and reduced oxidative stress in liver, spleen and kidney tissues. Histopathologically, all changes in the studied tissues confirmed with biochemical observations. Moreover, in vitro study showed that 5FUCNPs have strong antitumor activities. **In conclusion**: 5FUCNPs and/or low doses of γ-Irradiation have a role in reducing tumor growth and may represent a novel class of anti-cancer drugs and antiangiogenic cancer drugs.

Key words: 5-fluorouracil chitosan nanoparticles**,** Ehrlich Ascites Carcinoma, **γ-** Irradiation, vascular endothelial growth factor, platelet-derived growth factor, tumor necrosis factor, Glutathione and lipid peroxidation.

List of Abbreviations