Cairo University

Faculty of Veterinary Medicine

Department of Pathology

Comparative pathological study on the therapeutic effect of camel's milk, turmeric extract and cisplatin on induced hepatocarcinogenesis in rats

Thesis

Presented by

Marwa Mohamed Salah El Din Ibrahim Khattab

(BVSc. 2007- MVSc. 2010)

For PH. D in Pathology

(General, Special and Postmortem)

Supervised by

Prof. Dr. Hala Mohamed Farouk El Miniawy

Professor of Pathology and Head of Pathology Department

Faculty of Veterinary Medicine

Cairo University

Prof. Dr. Mohamed A. Tony

Professor of Nutrition

Department of Nutrition and Clinical Nutrition

Faculty of Veterinary Medicine

Cairo University

Prof. Dr. Sameeh Mansour

Prof. of Pesticide & Environmental Toxicology

Department of Pesticide Chemistry

National Research Centre

Dokki - Giza - Egypt

2015

بسم الله الرحمن الرحيم

قال تعالى :أَفَلَا يَنظُرُونَ إِلَى الْإِبِلِ كَيْفَ خُلِقَتْ (17)

صدق الله العظيم

سورة الغاشية

Cairo University
Faculty of Veterinary Medicine
Department of Pathology

Supervision Sheet

Prof. Dr. Hala Mohamed Farouk El Miniawy
Professor of Pathology and Head of Pathology Department
Faculty of Veterinary Medicine
Cairo University

Prof. Dr. Sameeh Mansour
Prof. of Pesticide & Environmental Toxicology
Department of Pesticide Chemistry
National Research Centre
Dokki - Giza - Egypt

Prof. Dr. Mohamed A. Tony
Professor of Nutrition
Department of Nutrition and Clinical Nutrition
Faculty of Veterinary Medicine

2015

Cairo University
Faculty of Veterinary Medicine
Department of Pathology

Name: Marwa Mohamed Salah El Din Ibrahim Khattab

Date of Birth: 23/1/1984

Nationality: Egyptian

Degree: Philosophy degree

Specialization: pathology (General, Special, Postmortem)

Title of the thesis: Comparative pathological study on the therapeutic effect of camel's milk, turmeric extract and cisplatin on induced hepatocarcinogenesis in rats

Supervision:
Prof. Dr. Hala Mohamed Farouk El Miniawy, Professor of Pathology and Head of Pathology Department, Faculty of Veterinary Medicine, Cairo University
Prof. Dr. Sameeh Mansour, Prof. of Pesticide & Environmental Toxicology, Department of Pesticide Chemistry, National Research Centre, Dokki - Giza - Egypt
Prof. Dr. Mohamed A. Tony, Professor of Nutrition, Department of Nutrition and Clinical Nutrition, Faculty of Veterinary Medicine, Cairo University.

Abstract

.

This study was carried out to investigate the possible therapeutic effect of camel milk on induced hepatocarcinogenesis in rats and comparably with other antitumor agent either natural (turmeric extract) or chemical (Cisplatin). This study was carried out to investigate the possible therapeutic effect of camel milk on induced hepatocarcinogenesis in rats and comparably with other antitumor agent either natural (turmeric extract) or chemical (Cisplatin). Induction of hepatocarcinogenesis was intitiated by diethylnitrosamine (DENA) and promoted by phenobarbitone. Body weight was recorded weekly. Whole blood, serum and liver and kidney Samples were collected. Relative liver and kidney weight, Biochemical analysis, hematology, lipid peroxidation and superoxide dismutase (SOD) activity in liver tissue were carried out. Histopathological studies of liver and kidney in addition to immunohistochemical staining of placental glutathione-s-transferase (P- GST) in liver were performed and the results were analysed using image analysis. The albumin concentration was decreased in the groups injected with DENA and was restored in the groups treated with camel milk. Urea and creatinine was elevated in the groups treated with cisplatin. Lipid peroxidation was detected in the group treated with turmeric extract only. The activity of SOD was decreased in the group treated with cisplatin only whereas its activity was restored in the groups treated with camel milk. The mean area of altered hepatocellular foci and the percent area of positively stained P-GST altered foci decreased greatly in

the groups treated with camel milk especially in the group treated with cisplatin and camel milk. Hepatocellular carcinoma failed to develop in the groups treated with camel milk. The kidney lesions were mainly chronic interstitial nephritis with thickening of glomerular and tubular basement membrane and were detected in the groups treated with cisplatin. In conclusion, camel milk possessed a good therapeutic effect against induced hepatocarcinogenesis which increased in conjunction with cisplatin whereas turmeric extract had the least therapeutic effect. Camel milk ameliorated the side effects of cisplatin on the kidneys. However, camel milk could be recommended to patients suffering from hepatic tumors.

Key words: Camel milk – turmeric extract – cisplatin – Diethylnitrosamine- liver tumors.

Dedication

To my dear parents, husband and beloved daughter Rofida for their great help and support they overwhelmed me with.

Thanks a lot…

ACKNOWLEDGEMENT

My deepest heartfelt gratefulness and appreciation is to my supervisor ***Prof. Dr. Hala Mohamed Farouk El Miniawy***, Professor of Pathology and Head of Pathology Department, Faculty of Veterinary Medicine, Cairo University for her kind supervision, guidance, continuous support, encouragement and assistance and for suggesting the point of this thesis. I am honored, thankful and fortunate to be a student of **Prof. Dr. Hala Mohamed Farouk El Miniawy.**

I would like to express my thanks and appreciation to my supervisor ***Prof. Dr. Sameeh A. Mansour,*** Professor of Pesticide & Enviromental Toxicology, Department of Pesticide Chemistry, National Research Centre, Dokki, Giza, Egypt for his great assistance, guidance , supervision and providing the laboratory space and equipments used to perform the tissue homogenate and lipid peroxidation.

I would like to express gratefulness and appreciation to my supervisor **Prof. D*r. Mohamed A. Tony*,** Professor of Nutrition and Clinical Nutrition, Faculty of Veterinary Medicine, Cairo University, for continuous support, assistance, encouragement and guidance

I would like to express my deepest heartfelt gratefulness and gratitude to ***Prof. Dr. Kawkab A. Ahmed***, Professor of Pathology, Faculty of Veterinary Medicine, Cairo University,

for her great scientific assistance, encouragement, guidance and continuous support.

I would like also to express my deepest thanks and gratitude for ***Prof. Dr. Mostafa Shalaby,*** Professor of Pharmacology, Faculty of veterinary Medicine, Cairo University for aiding me in the extraction of curcuminoids used in this study.

I would like to express my thanks and gratefulness to **Assistant lecturer Omar Abd El Latif** and **Demonstrator Fatma Abd El Fatah Fadl** in the Department of Clinical Pathology, Faculty of veterinary medicine, Cairo University for aiding me in the hematology and biochemical analysis.

I would like also to express my deepest thanks and gratitude for the **Egyptian International Pharmaceutical Cooperation (EIPICO)** for kindly providing me with the phenobarbitone.

I would like to express sincere thanks and gratitude to all members in the Department of Pathology, Faculty of Veterinary Medicine, Cairo University for their great help, support and care they provided me.