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شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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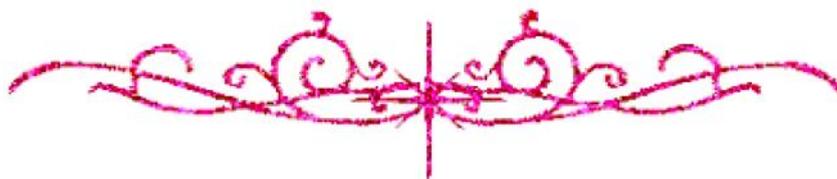


بعض الوثائق الأصلية تالفة





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**Faculty of Science
Biochemistry Department**

Effect of Iron Supplementation on Impaired Iron Homeostasis in Rats Induced by Aloin Treatment

Thesis Submitted by:

Mostafa Mohamed Abdelmoniem Hanafy
(B.Sc. in Biochemistry, 2007)

In Partial Fulfillment of the Degree of Master of Science
in Biochemistry

Under the Supervision of:

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Biochemistry Department



Approval sheet

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This thesis has not been submitted for a degree at this or any other university.

Mostafa Mohamed Abdelmoniem

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Dedication

This thesis is wholeheartedly dedicated to

*..... my story's heroes “beloved Dad and Mum”, who
taught me to trust in “Allah” and have always been my
source of happiness, support and strength*

*.....my special brother “Dr. Abdelmoniem Mohamed”
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*..... every special person, who lit up my road, heart,
and soul.*

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you are always in my heart,
“love you Dad”.

Effect of Iron Supplementation on Impaired Iron Homeostasis in Rats Induced by Aloin Treatment

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Abstract

The present study aimed at investigating the effect of aloin with/without iron supplementation on iron homeostasis and erythropoiesis in rats, compared to doxorubicin. Doxorubicin treatment significantly reduced some blood indices, including WBCs and RBCs, hemoglobin level and hematocrit value. It caused perturbations in iron homeostasis as evidenced by reducing serum iron level and transferrin saturation percent, as well as increasing hepatic hepcidin level associated with iron overload in the liver and spleen. Furthermore, the mRNA expression of transferrin receptor (TfR-1) and ferritin (Ferr-H) genes was increased. Aloin treatment significantly reduced RBCs count, hemoglobin level, hematocrit value and downregulated the mRNA expression of TfR-1 gene, in addition to a significant reduction in liver and kidney iron content. Also, treatment with aloin increased WBCs count, hepatic hepcidin level, serum iron, transferrin saturation, the mRNA expression of Ferr-H gene, as well as iron

overload in the spleen. Iron supplementation to doxorubicin-treated rats for 2 consecutive weeks caused a more pronounced reduction in the spleen iron content, hepatic hepcidin level and mRNA expression of TfR-1, compared to doxorubicin *per se*. On the other hand, administration of iron to aloin-treated rats normalized all of the aforementioned disrupted parameters, except for a more pronounced reduction in spleen iron content, and a more notable increase of iron content in the heart and kidney, compared to aloin-treated rats. Histopathological examination of the bone marrow smears, as well as the sections of liver, spleen, heart and kidneys were done to support the biochemical data. In conclusion, iron supplementation restores the disturbances in iron homeostasis and erythropoiesis following aloin treatment.

Key words: Aloin-Doxorubicin -Blood indices -Iron homeostasis
Histopathological studies- rats