European Journal of Molecular & Clinical Medicine
ISSN 2515-8260 Volume 7, Issue 09, 2020

# Reducing The Histological Effect Of Doxorubicin By Artemisinin Compound On Kidney In Najaf

Zahraa Falah AbdAlaali Annooz[1] & Qassim.M.Hashym[2]

[1]*Alfurat Al-Awsat Technical University 31003 AlKufa Iraq, Healthy Medical Techniques Colleges, Clinical Pathology department*
[2]*Alfurat Al-Awsat Technical University 31003 AlKufa Iraq, Healthy Medical Techniques Colleges, Clinical Histopathology department*
biozfaaa@gmail.com

***Abstract***: ***The current study included a statement of the effect of the chemical compound on the kidney organ and how to reduce the effect of the chemical compound on the organs through the use of artemisinin compound and the mixture between the two compounds. Where the results showed that the compound doxorubicin affects the tissue of the kidney, where damage in cell tissue and the results of artemisinin were similar to the results of normal muse tissue, whereas the results of mixture of the two compounds had the least effect on the tissue from the effect of doxorubicin.***

## INTRODUCTION

The use of chemotherapy to treat cancer began at the start of the 20th century with attempts to narrow the universe of chemicals that might affect the disease [1].One of these drugs is doxorubicin (DOX) which is a potent anthracycline antibiotic; It is a widely used drug to treat a variety of human malignancies, but it's cardiotoxicity has long been recognized as a complicating factor [2]. Another drug is Methotrexate (MTX) which is an effective and extensively used chemotherapeutic agent to treat range of malignancies, but its therapeutic use is limited due to high incidence of serious dose- dependent toxicity, including hepatotoxicity, renal damage, bone marrow suppression, and gastrointestinal mucosal infection [3].

Treatment of cancer include chemotherapy, surgery, radiation, immunological and gene therapy [4].

Chemical treatments and that have negative effects on the body and the most important: Hair loss, weight loss, as well as liver tissue damage caused by toxic effects of chemical and respiratory disorders, etc. [5]. Alternative medicine has been used to reduce the toxicity and side effects of chemotherapy leading to positive and acceptable results in many breast, colon and skin cancers [7].

Numerous phytonutrients found in fruits, herbs and spices act as potent preventative agents against cancer by preventing the over production of toxic chemicals within the body [8].

Artemisia herba-alba was known for its therapeutic and various it, secondary metabolites have been isolated from Artemisia. herba-alba, possibly the most important being the compound which has medicinal properties [9].

Aim of the study:

The aim of this study include decreasing the side effects of DOX and a cure by the following:

1. Study the effect of artemisinin and doxorubicin on the light microscopic changes of kidney, tissues.
2. Find an anti-cancer drug free of side effects on the kidney.

## MATERIAL AND METHODS

The Experimental Design for Animals

120 animals were taken from laboratory mice and were divided into three main groups (one, two, three weeks) at different time intervals. Each group was then divided into four groups. The first was the control group given to Normal Slin and the other three groups, Artemisinin at a concentration 60 mg and the second gave the doxorubicin component with a concentration 5mg/kg b.wt and valence gave a mixture of ART and DOX called ARD concentration 60 , 5mg/kg b.wt) respectively and after Period of time the animal was sacrificed and fixed in formalin (10%) for histopathological study .

## RESULTS AND DISCUSSIONS

The Result of the Light Microscope

The study microscopic was done for kidney , spleen and lung organs for it is importance and our study show that there is clear changes in the size cell nuclei to forming bowman's capsular which lead to renal failure but artemsinin compound was result is similar normal while mixture result were less effect from doxorubicin alone as show in picture (3.1,2,3,4)

DOX effect on kidney from increase in line apoptosis which effect on tissue kidney through loss in urine product result destroy Doxorubicin interacts with DNA by intercalation and inhibition of macromolecular biosynthesis in the bowman's capsular this study according with Tacar (2013) [10].

Thus, Haladah says, doxorubicin appears to have a spleen effect in this non-cancerous model. Knowledge of this mechanism may help to explore strategies that maintain the health of the spleen and the heart during the treatment of doxorubicin in cancer models this study according to Evans (2012) [11].

But look camper high when use artemisinin wears not find any change histological wears near normal in more organs and this study according to with opinion Wang (2016) [12].

And artemisinin don't effect on any normal cell obesity in cancer cell only that cause cancer cell have receptor arrowed cell membrane and that receptor selectivity artemisinin and some chemotherapy drug but normal cell don't have these receptor also look doxorubicin enter each cell and don't differ between normal and cancer cell which lead kill all cell but artemisinin is selectivity to cancer cell only as in opinion Liang (2018)[13].

But when use ARD in the vivo wears shows result decrease effect doxorubicin during three weeks compared with animals organe which treated doxorubicin that coming closer of result

blood and scaning electron microscopic result because aretemisinin decrease effect toxicity to doxorubicin as in opinion Alyousif (2017) [14,15].

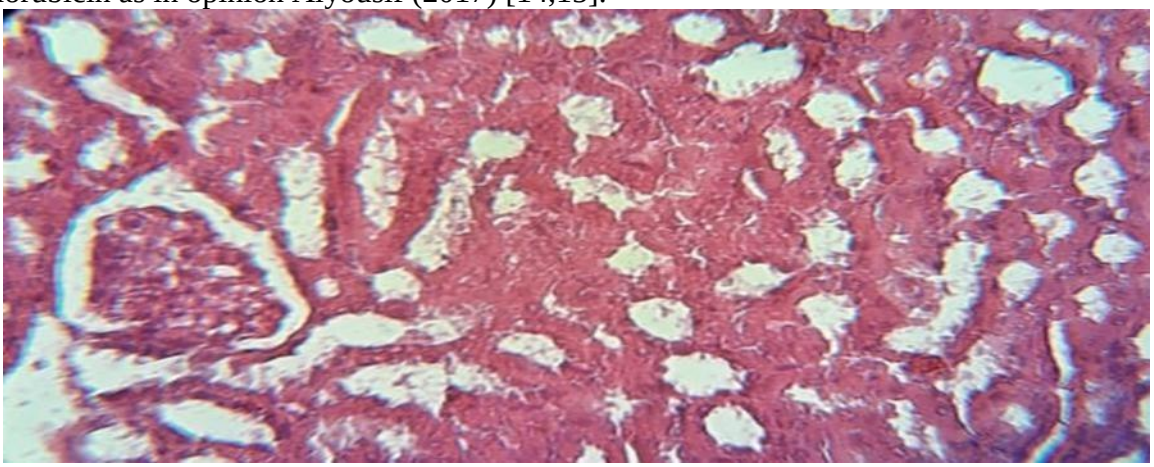

**Figure 1.** Show this picture normal fibers to spleen in normal animals by use light microscope (H, E stain, 40X)

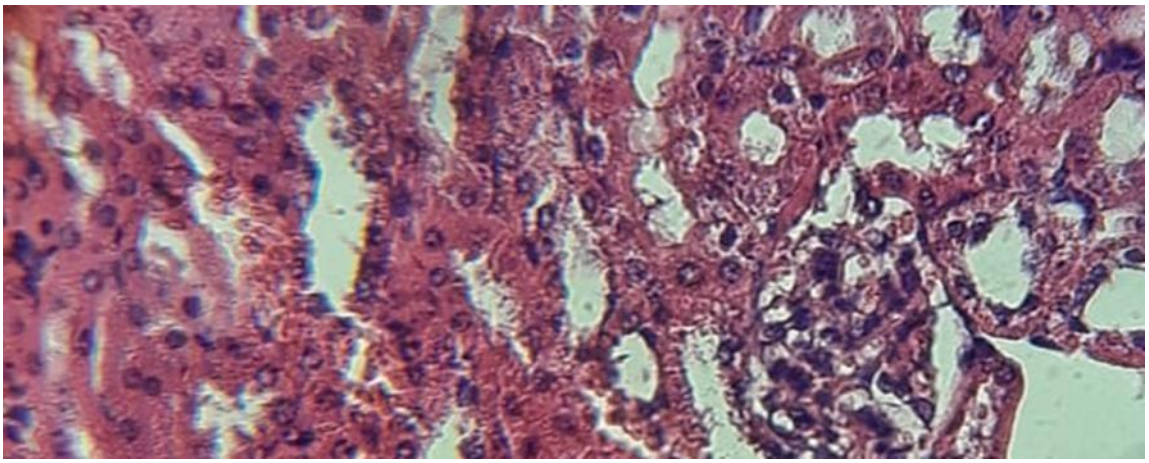

**Figure 2.** Show This picture is effect doxorubicin on kidney by use light microscope (H,E stain, 40X)

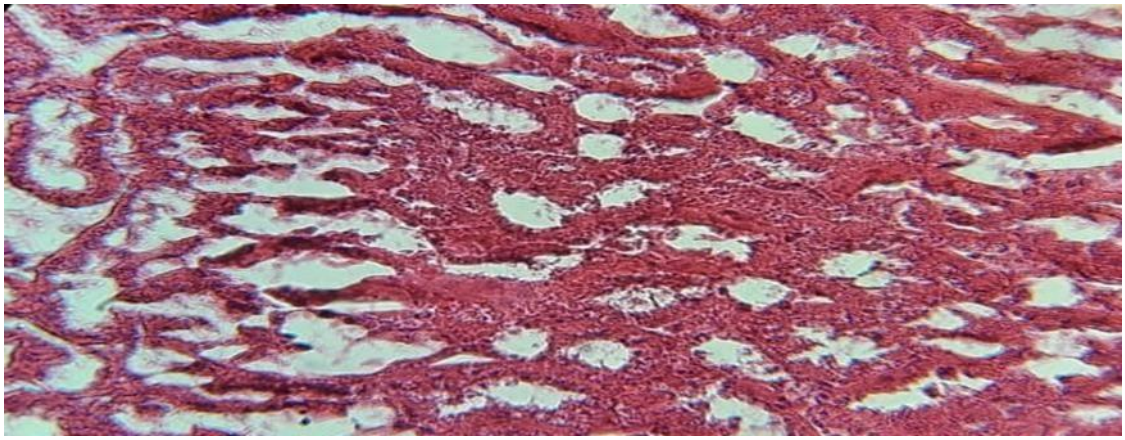

**Figure 3.** Show this picture effect artemisinin by use light microscope (H,E stain, 40X)

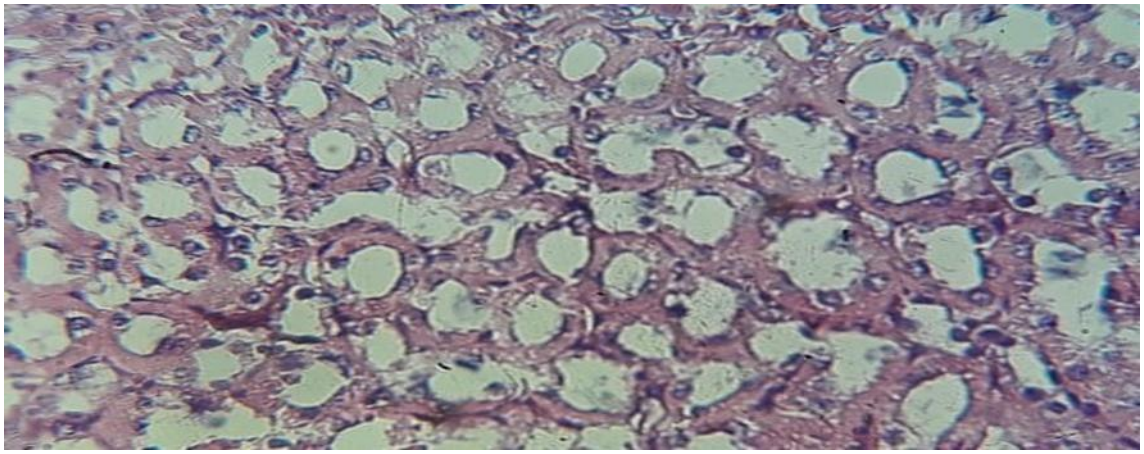

**Figure 4.** Show this picture effect mixture by use light microscope (H, E stain, 40X)

## CONCLUSION

1- Doxorubicin has sever effect on kidney which lead to dysfunction.
2- Doxorubicin toxicity were less when combination with artemisinin and this is the result of synergisum action of mixture from (ART).
3- Artemisinin don't find any effect on these organs.

## RECOMMENDATION

1- Use different concentrations and durations of artemisinin and mixture on remained organs.
2- Study the effect of ART on internal mitochondrial membrane by anther technique.

## REFERENCES

[1] DeVita, V.T.and Chu, E., (2008). A history of cancer chemotherapy. Cancerres, 68(21):8643- 8653.
[2] Ibsen, S.; Zahavy, E.; Wrasdilo, W.; Berns, M.; Chan, M. and Esener, S. (2010). A novel doxorubicin prodrug with controllable photolysis activation for cancer chemotherapy. Pharm. Res, 27(9):1848–1860.
[3] Hemeida, R.A. and Mohafez, O.M., (2008). Curcumin attenuates methotraxate-induced hepatic oxidative damage in rats. Journal of the Egyptian National Cancer Institute, 20(2):141-148.
[4] Dhifaf, 2018. Molecular and Cytotoxicity Study of Compounded Anthracycline in Mice Model of Rhabdomyosarcoma.
[5] Remesh, A. (2017). Toxicities of anticancer drugs and its management . International Journal of Basic & Clinical Pharmacology, 1(1), 2-12.
[6] Sak, K. (2012). Chemotherapy and dietary phytochemical agents. Chemotherapy research and practice.
[7] Ali, M., Abbasi, B. H., Ahmad, N., Khan, H., & Ali, G. S. (2017). Strategies to enhance biologically active-secondary metabolites in cell cultures of Artemisia–current trends. Critical reviews in biotechnology, 37(7), 833-851
[8] AL-Zahid, 2014.Histological and Immunohistochemical Studies of Artemisia herba alba on mouse bearing adenocarcinoma.
[9] Tacar, O., Sriamornsak, P. and Dass, C.R., 2013. Doxorubicin: an update on anticancer molecular action, toxicity and novel drug delivery systems. Journal of pharmacy and pharmacology, 65(2), pp.157-170

[10] Evans-Lacko, S., Henderson, C. and Thornicroft, G., 2013. Public knowledge, attitudes and behaviour regarding people with mental illness in England 2009-2012. The British Journal of Psychiatry, 202(s55), pp.s51-s57.
[11] Li, X.F., Dong, H.L., Huang, X.Y., Qiu, Y.F., Wang, H.J., Deng, Y.Q., Zhang, N.N., Ye, Q.,
[12] Zhao, H., Liu, Z.Y. and Fan, H., 2016. Characterization of a 2016 clinical isolate of Zika virus in non-human primates. EBioMedicine, 12, pp.170-177.
[13] Das, S., Filippone, S. M., Williams, D. S., Das, A., & Kukreja, R. C. (2016). Beet root juice protects against doxorubicin toxicity in cardiomyocytes while enhancing apoptosis in breast cancer cells. Molecular and cellular biochemistry, 421(1-2), 89-101.
[14] Liang, X., Shen, S., Xu, T., Feng, J. and Yan, S., 2018. Scale-aware fast R-CNN for pedestrian detection. IEEE transactions on Multimedia, 20(4), pp.985-996.
[15] Al YOUSIF, Ali, A., Al-Dahhan, W.E.D.A.D., Zageer, D.H.E.A.A. and, E., 2017. a vision to promote the forensic DNA facility at Al-Nahrain university in terms of safety
[16] Measures. Oriental Journal of Physical Sciences, 2, pp.37-41