

The Effect of Olive Oil on Hematotoxicity Induced by Ibuprofen in Male Rabbits

Dr. Abdulrahman Salem Yaseen
Assistant Prof. of animal physiology
Department of Biology
College of Sciences
Hadhramout University, Yemen

Dr. Abdullah Ahmed Babsili
Assistant Prof. of biochemistry
Department of Biology
College of Sciences
Hadhramout University, Yemen

Rafat Mohsen Hussein Salem
Master's student
Department of Biology
College of Sciences
Hadhramout University, Yemen

Abstract:

Ibuprofen is known as a nonsteroidal anti-inflammatory drugs (NSAIDs), described as analgesic, antipyretic and anti-inflammatory agent. Ibuprofen had been notified to be linked with some adverse effects. This present study was performed to find out the toxic effects of ibuprofen on blood cell components of male rabbits, as well as to evaluate the effective role of olive oil in reducing its toxicity.

A total of eighteen male rabbits weighing between (900-1000 g) selected randomly from the local market. The study sample was categorized into three groups: six male rabbits control group orally administered with distilled water once per day for 30 days, six male rabbits group orally administered with (40 mg/kg) ibuprofen once per day for 30 days and six male rabbits group orally administered with (40 mg/kg) ibuprofen and 2 ml/kg of olive oil once per day for 30 days. At the end of experiment, all experimental animals were sacrificed and blood sample was collected. Red blood cells mass and indices, white blood cells count and differential, as well as platelets count were estimated using a hematological autoanalyzer instrument.

The results showed 40 mg of ibuprofen caused a significant decrease ($P < 0.001$) in the mass and indices of red blood cells and platelets counts. Also, a significant increase showed in total of white blood cells and disturbances of differential in ibuprofen group compared with control group. The use of olive oil had a positive effect against the hematotoxicity of ibuprofen, the results recorded improvement in the level of blood components in ibuprofen and olive oil group compared with ibuprofen group.

In conclusion, regular intake of olive oil syrup may be useful in improving blood components and may reduce the hematotoxicity of ibuprofen agent. Further studies at molecular level are needed to know the exact mechanism of ibuprofen hematotoxicity.

Keywords: Ibuprofen, Olive oil, Hematotoxicity, Rabbits.

Introduction:

Ibuprofen, 2-(4-isobutylphenyl) propionic acid, belongs to the class of drugs called nonsteroidal anti-inflammatory drugs (NSAIDs). Ibuprofen is prescribed commonly as an analgesic, antipyretic and anti-inflammatory agents in conditions like osteoarthritis, rheumatoid arthritis, juvenile idiopathic arthritis, and acutely painful musculoskeletal conditions (Lichtenberger *et al.*, 2012; Foreman *et al.*, 2018). Ibuprofen exert their anti-inflammatory, analgesic, and antipyretic effects by inhibiting of prostaglandins (PGs) synthesis, by suppressing the enzyme cyclooxygenase (COX), which are the enzymes that

convert arachidonic acid into prostaglandins, thromboxanes, and prostacyclins (Hiřovská *et al.*, 2015; Bashyal, 2018).

In spite of their beneficial effects, NSAIDs have been notified to be linked with some adverse effects, such as a toxicity of the gastrointestinal tract (Higuchi *et al.*, 2009), ibuprofen also causes hepatotoxicity (Abbass *et al.*, 2017 b; Najafian *et al.*, 2017), cardiovascular toxicity, especially in people with hypertension (Schellack, 2014), damage to kidney (Ali and Mahboob, 2018; Gul *et al.*, 2019). In addition to their influence on clotting function (Siroka and Svobodova, 2013) and semen quality (Banihani, 2019).

Olive oil is a functional food that, besides its high content in mono-unsaturated fatty acids, also contains other minor biologically active components, such as vitamins, minerals, and polyphenols (Covas *et al.*, 2006). Olive oil has bioactive compounds such as polyphenols, hydrocarbons, phytosterols, and triterpenes (Storniolo and Moreno, 2016). These phenolic compounds of olive oil have potentially advantageous biological effects such as antimicrobial, antioxidant, and anti-inflammatory properties (Rincón-Cervera *et al.*, 2016). As well as, olive oil improved blood profile and renal toxicity (Mokhtari *et al.*, 2019), cardiovascular and liver damage (Visioli and Galli, 1999; Alturkistani *et al.*, 2019). Therefore, current study was designed to determine the effects of olive oil against ibuprofen induced hematotoxicity in male rabbits.

Materials and Methods:

Chemicals:

Ibuprofen syrup (Each 5ml contains 100mg, Julphar Pharmaceutical, UAE) and olive oil syrup (Rafael Salgado (RS) brand, Spain) were used.

Animals and experimental protocol:

This study was conducted on 18 male rabbits weighing between 900 - 1000 g were obtained from the local market. The rabbits were free from any congenital disorders and remarkable disease that may cause any problem in the study. The rabbits were kept in a ventilated animal house with a controlled light-dark cycle (12 h light/dark) and constant temperature (25-27°C). Food and water were provided *ad libitum*. After acclimatization period of two weeks the rabbits were randomly divided into three equal groups, each group consists of six rabbits as the following:

Group1 (C): rabbits in this group were administered orally with distilled water once a day for 30 days, and considered as a negative control group.

Group 2 (IB): rabbits in this group were orally administered with ibuprofen at a dose of 40 mg / kg once a day for 30 days, and considered a positive control group (Abbass *et al.*, 2017a).

Group 3 (IB+OO): rabbits in this group were orally administered with ibuprofen at a dose of 40 mg / kg and 2 ml / kg olive oil once a day for 30 days (Necib *et al.*, 2013).

Hematological parameters estimation:

2 ml of blood samples were obtained and collected into tubes with ethylene diamine tetra acetic acid (EDTA) anticoagulant. Red blood cells (RBCs) count, hemoglobin (Hb) concentration, hematocrit (Hct), RBC indices; mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC),

total and differential white blood cells (WBCs) and platelets (PLT) count were estimated using a hematological autoanalyzer instrument (Dymind, DF52, China) following the manufacturer's instruction.

Statistical analysis:

The results were represented as mean $\pm$ standard division (SD), differences between control and other experimental groups were tested for statistical significance using the statistical package for social science program (SPSS Inc., Chicago, USA) version (20). One way analysis of variance (ANOVA) for comparison between different groups was used followed by Tukey's test, and $P < 0.05$ was considered to be statistically significant.

Results:

As shown in **Table 1**, there was a significant ($p < 0.001$) decrease in RBCs count (Figure 1), Hb concentration (Figure 2), HCT percentage (Figure 3), MCV level (Figure 4), MCH level (Figure 5), MCHC level (Figure 6), PLT count (Figure 7), as well as Neu percentage (Figure 9) in rabbits treated with ibuprofen alone compared to control group. The results also showed a significant ($p < 0.001$) increase in WBCs count (Figure 8) and Lym percentage (Figure 10) in ibuprofen group compared to control animals. Rabbits treated with olive oil revealed a notable improvement of these aforementioned parameters in comparison with ibuprofen group. Olive oil significantly ($p < 0.001$) increase the red blood mass and indices, as well as the PLT count and Neu percentage. WBCs count and Lym percentage was also significantly ($P \leq 0.05$) decreased in olive oil group when comparison with ibuprofen treated group.

Table 1. Change of hematological parameters in study groups

Groups Parameters	Control	Ibuprofen	Ibuprofen + olive oil
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD
RBCs ($\times 10^6$ cell/ μ l)	6.7017 $\pm$ 0.099	5.3917 $\pm$ 0.268 ^a	6.3150 $\pm$ 0.216 ^{ab}
HGB (g/dl)	13.367 $\pm$ 0.163	10.533 $\pm$ 0.273 ^a	13.833 $\pm$ 0.0816 ^b
HCT (%)	42.033 $\pm$ 1.105	33.450 $\pm$ 0.742 ^a	43.583 $\pm$ 1.049 ^b
MCV (fl)	66.833 $\pm$ 0.922	55.217 $\pm$ 1.205 ^a	65.733 $\pm$ 0.662 ^b
MCH (pg)	24.733 $\pm$ 0.765	20.917 $\pm$ 0.487 ^a	23.100 $\pm$ 0.167 ^{ab}
MCHC (%)	35.633 $\pm$ 0.789	32.067 $\pm$ 0.467 ^a	33.450 $\pm$ 0.258 ^{ab}
PLT ($\times 10^3$ cell/ μ l)	626.67 $\pm$ 4.844	337.33 $\pm$ 3.445 ^a	497.33 $\pm$ 1.506 ^{ab}
WBC ($\times 10^3$ cell/ μ l)	5.233 $\pm$ 0.134	8.886 $\pm$ 0.375 ^a	5.608 $\pm$ 0.114 ^b
Neu (%)	56.233 $\pm$ 0.628	41.116 $\pm$ 0.397 ^a	49.333 $\pm$ 0.602 ^{ab}
Lym (%)	35.616 $\pm$ 0.630	45.050 $\pm$ 0.561 ^a	40.916 $\pm$ 0.702 ^{ab}

Result expressed as Mean $\pm$ SD of n = 6 rabbits

a = significant differences between control group and ibuprofen group, at $p < 0.05$

b = significant differences between ibuprofen group and olive oil group, at $p < 0.05$

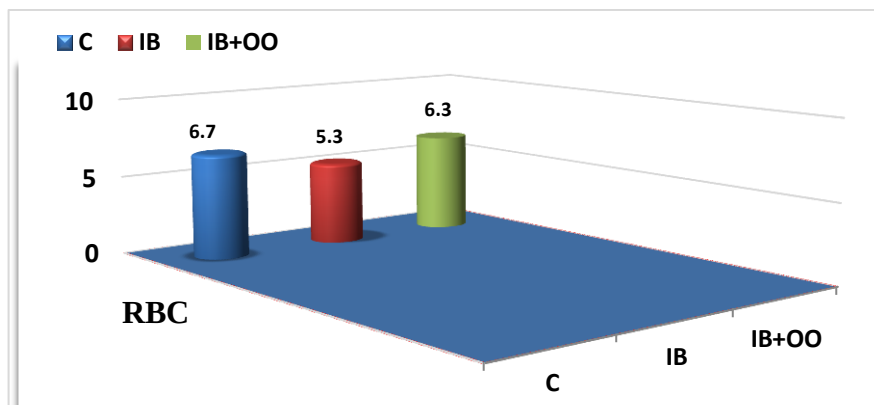


Figure (1): Red blood cells count in study groups

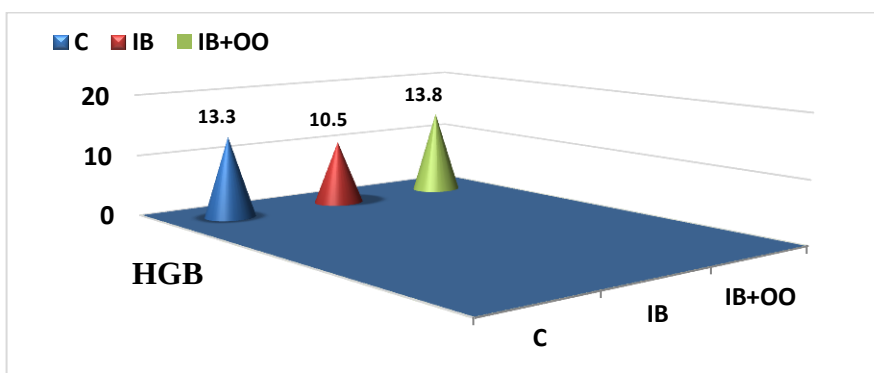


Figure (2): Hemoglobin concentration in study groups

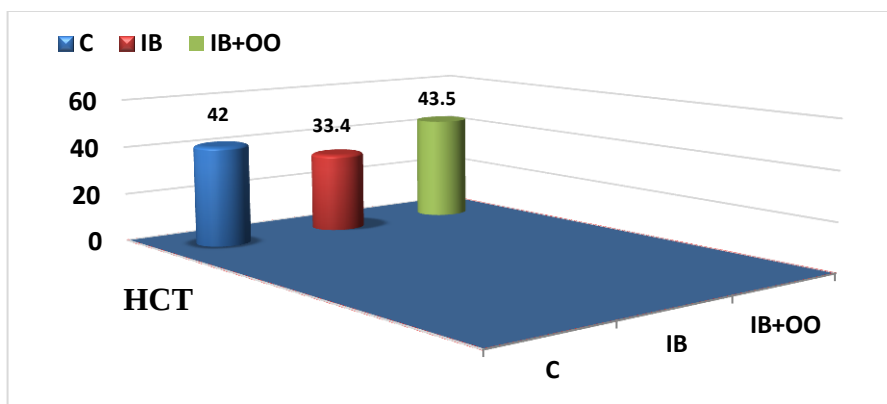


Figure (3): Hematocrit percentage in study groups

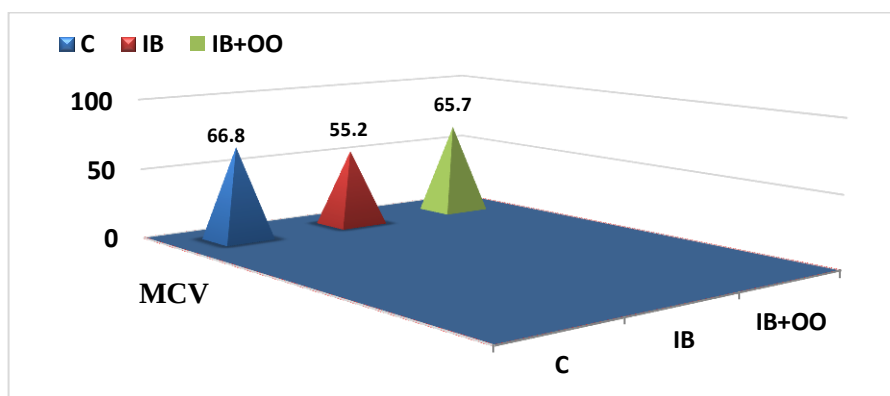


Figure (4): Mean corpuscular volume in study groups

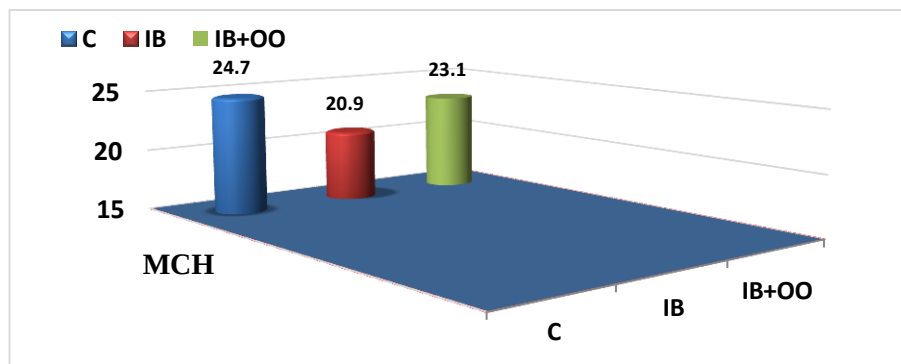


Figure (5): Mean corpuscular hemoglobin in study groups

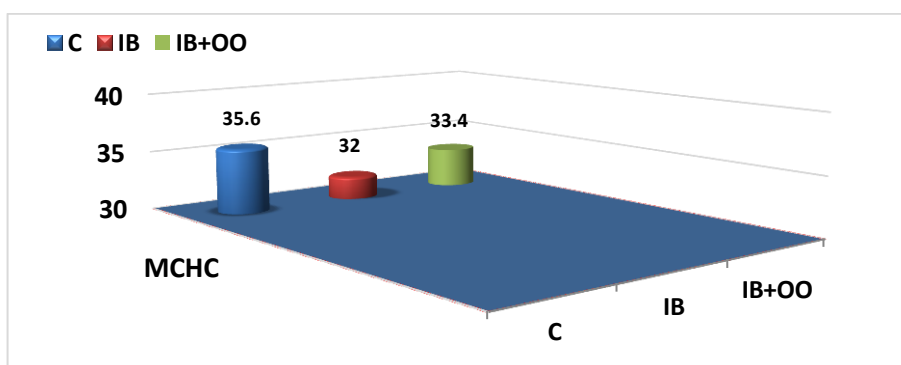


Figure (6): Mean corpuscular hemoglobin concentration in study groups

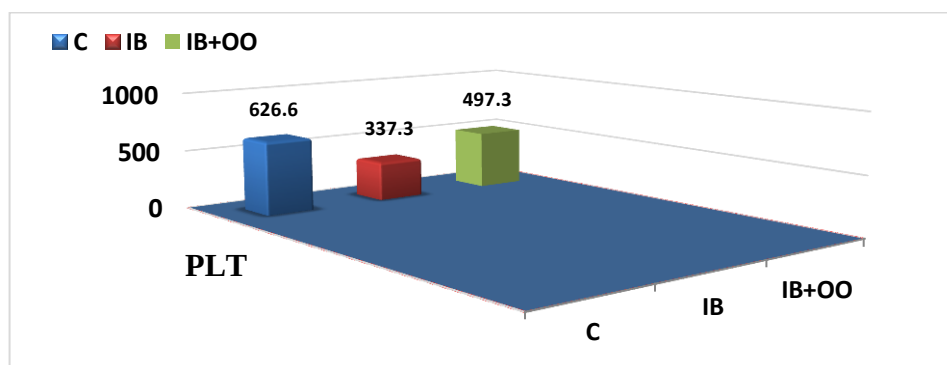


Figure (7): Platelets count in study groups

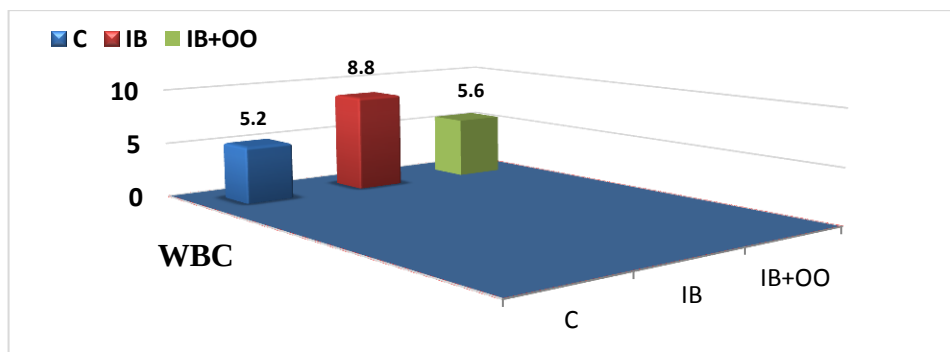


Figure (8): White blood cells count in study groups

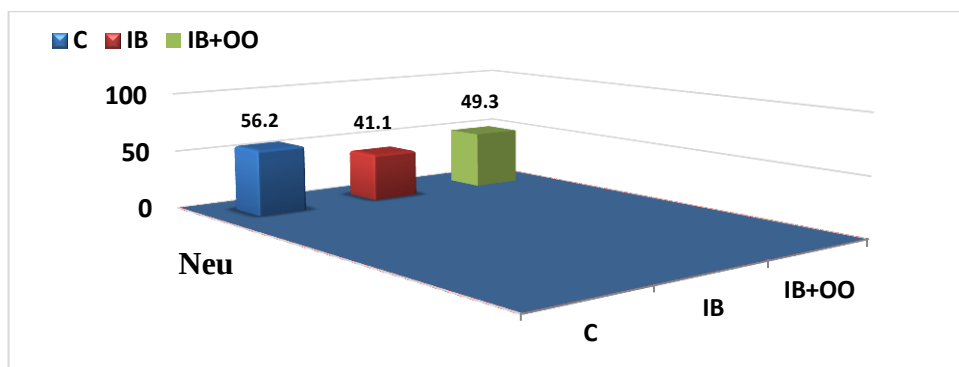


Figure (9): Neutrophils percentage in study groups

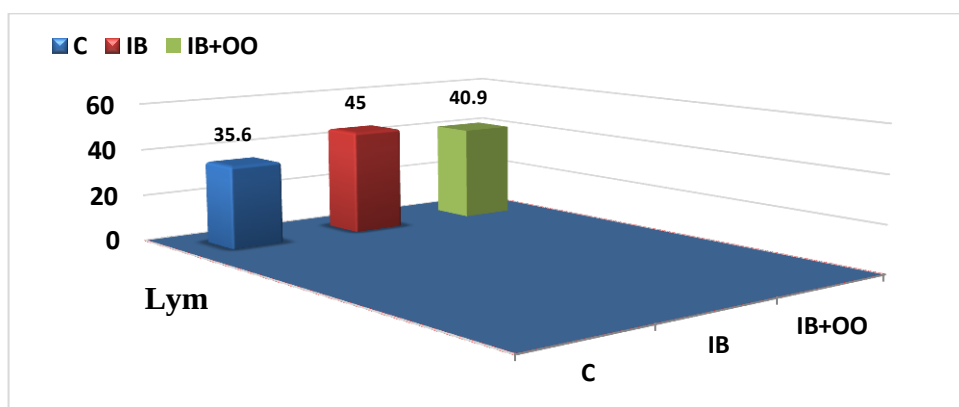


Figure (10): Lymphocyte percentage in study groups

Discussion:

Nonsteroidal anti-inflammatory drugs such as ibuprofen are widely available over the counter and possess effective pain relieving, antipyretic, and anti-inflammatory properties. This study was aimed to find out the toxic effects of ibuprofen on some blood components in male rabbits, and evaluate the effective role of olive oil in removing that toxicity. The amount of ibuprofen given to animals in this study was equal to the standard therapeutic dose.

In the present study, abnormalities in blood cell parameters of ibuprofen treated rabbits were noted compared to control rabbits, the results observed a significant decrease in the erythrocytes mass and indices. These findings were consistent with some study results and different with another, the study of Dheyab and Sawsan, (2018) reported that ibuprofen cause a significant decrease in Hb concentration and RBCs count on mice, while a study of Saravanan *et al.* (2012) found a significant decrease in RBCs count and MCHC level, and a significant increase in the levels of Hb, Htc, MCV, and MCH in the Indian major carp. The study carried out on the African cat fish by Ogueji *et al.* (2018) founded that ibuprofen cause a significant decrease in RBCs count, Hb, and Htc and a significant increase MCV, MCH and MCHC. Ibuprofen caused a significant decrease in RBCs count, Hb concentration, and Htc percentage in dogs (Ramprabhu *et al.*, 2001). On the other hand, study of Gomaa (2017) reported a significant increase in RBCs count, Hb concentration, and Htc percentage on mice.

In addition, the results of some studies have concluded that the administration of ibuprofen did not cause any significant changes in RBCs count, Hb concentration, and Htc

percentage, including the results of the study conducted on rabbits (Rita *et al.*, 2008), broiler chicken (Shafi *et al.*, 2012), and rats (Aprioku *et al.*, 2014). The reason for the difference in the results of the current study with the results obtained in those studies may be due to the difference in the quantity and methods of dose administering, as well as the difference in animal species.

The prolonged use nonsteroidal anti-inflammatory drugs, including ibuprofen, were toxic to the blood-forming tissue in the bone marrow, which leads to the development of anemia, or the resulting kidney damage leads to a decrease in the secretion of erythropoietin hormone responsible for forming red blood cells in the bone marrow, which it leads to a decrease in the formation of RBCs. Also, bleeding that occurs in the gut may lead to a decrease in mass of RBCs and consequently anemia. In addition, the decrease in RBCs indices may be due to the toxicity of ibuprofen which leads to the emergence of microcytic anemia (Orinya *et al.*, 2016; Gomaa, 2017).

The results of the current study showed a significant decrease in PLT count in ibuprofen treated group compared control group, the results were in agreement with the previous reports by Bolfer *et al.* (2014) that was implemented on dogs. Also, Martini *et al.* (2015) conducting a study on pigs to assess the effect of the ibuprofen dose on thrombocytopenia and thrombosis, the results of that study showed that ibuprofen caused the inhibition of platelet aggregation at recommended doses. Study of (Aprioku and Uche, 2013) which were performed on mice to evaluate the toxicity of ibuprofen, observed decrease in the PLT count, and concluded that the impact of a ibuprofen anti-platelet is more important with the duration of exposure than the amount of dose. As well as a study that was conducted on mice by Dheyab and Sawsan, (2018) which showed that of ibuprofen has caused a significant decrease of PLT count. Nonsteroidal anti-inflammatory drugs including ibuprofen have antiplatelet activities (Yokoyama *et al.*, 2013), it is clear that giving ibuprofen rabbits caused a significant decrease in PLT count which may refers to the presence of demolition in PLT or damage to bone marrow .

WBCs are used as an indicator of the body health, as these cells fall within the natural immunity that defense of the body (Ballarin *et al.*, 2004). The results of the current study found that there was a significant increase in WBCs count in rabbits treated with ibuprofen compared to the animals of the control group. The results also showed a decrease in the WBCs differential count of Neu, and increase in Lym in rabbits treated with ibuprofen. This increase in WBCs count can be the result of an immune defense mechanism that tries to protect the body from infection after liver damage. The increase in WBCs count despite decreases in all other erythrogram and PLT counts could indicate that the bone marrow is not completely depressed.

While ibuprofen depressed erythropoiesis and thrombopoiesis, it promoted the formation leucopoiesis. Result of current study was consistent with the study that was conducted by Aprioku *et al.* (2014) and was implemented on mice. On the other hand, a study of Gomaa (2018) showed ibuprofen did not cause any significant change in WBCs count on mice.

Results of this study recorded improvement in the level of blood components that were studied in the ibuprofen +olive oil group compared to the ibuprofen group, and the results are consistent with the results of various studies, including a study of Mokhtari *et al.* (2019)

that found the olive oil significantly improved blood profile and renal toxicity in rats that were injected with Ethephon, this is due to the antioxidant properties of the olive oil, besides the study of Ghorbel *et al.* (2017) which explained that the olive oil significantly improved the blood toxicity caused by acrylamide. Olive oil led to significant increase in RBCs count, Hb concentration, and Htc percentage and reduces significantly WBCs count, through the antioxidants and free radicals scavenging properties

In conclusion, the olive oil has significant hematoprotective activity against ibuprofen-induced hematotoxicity in male rabbits.

References:

- Abbass, M.T., Abed, R.M. and Metab, N.J. (2017a). The Effect of olive oil on ibuprofen induced Renal toxicity in female rats. **Kerbala journal of pharmaceutical sciences**, 13: 167-177.
- Abbass, M.T., Abed, R.M., and Metab, N.J. (2017b). The Effect of olive oil (*olea europaea*) on ibuprofen induced hepatotoxicity in female rats. **Kerbala journal of pharmaceutical sciences**, 13: 178-187.
- Ali, A. and Mahboob, T. (2018). Protective efficacy of *calotropis procera* leaf hexane extract against ibuprofen induced kidney toxicity in albino rats. **Annals of Jinnah Sindh Medical University**, 4(1): 13-22.
- Alturkistani, H.A., Abuzinadah, O.A.H., Kelany, A.M., Abd El-Aziz, G.S. and Alrafiah, A.R. (2019). The combined effect of honey and olive oil against methotrexate mediated hepatotoxicity in rats: A biochemical, histological and immunohistological study. **Journal of Histology and Histopathology**, 34(12): 1313-1327.
- Aprioku, J.S. and Uche F.I. (2013). Renal Effects of non-steroidal anti-inflammatory drugs in Albino Rats. **British Journal of pharmaceutical Research**, 3: 314-325.
- Aprioku, J.S., Nwidu, L.L. and Amadi, C.N. (2014). Evaluation of Toxicological Profile of Ibuprofen in Wistar Albino Rats. **American Journal of Biomedical Sciences**, 6(1): 32-40.
- Ballarin, L. M., Dall'Oro, D., Bertotto, A., Libertini, A., Francescon, A. Barbaro, A. (2004). Haematological parameters in *Umbrina cirrosa* (Teleostei, Sciaenidae): A comparison between diploid and triploid specimens. **Comparative Biochemistry and Physiology**, 138: 45–51.
- Banihani, S.A. (2019). Effect of ibuprofen on semen quality. **Andrologia**, 51(4): e13228.
- Bashyal, S. (2018). Ibuprofen and its Different Analytical and Manufacturing Methods: A Review. **Journal of Pharmaceutical and Clinical Research**. 11(7): 25-29.
- Bolfer, L., McMichael, M., Ngwenyama, T.R. and O'Brien, M.A. (2014). Treatment of Ibuprofen Toxicities in a Dog with IV Lipid Emulsion. **Journal of the American Animal Hospital Association**, 50 (2): 136-140.
- Covas, M., Nyssönen, K., Poulsen, H.E., Kaikkonen, J., Zunft, H.J.F. and Kiesewetter, H. (2006). The effect of polyphenols in olive oil on heart disease risk factors: a randomized trial. **Annals Internal Medicine**. 145:333–41.
- Dheyab, D. S. and Sawsan, K. M. (2018). Study The Effect Of *Urtica Pullifera* Leaves On Ibuprofen Induced Hepatic Renal Damage In Albino Rats. **International Journal of Advanced Biological Research**, 8(1): 57-62.
- Foreman, A.J., Neiman, E.A. and Morgan, W.J. (2018). Association of High-Dose Ibuprofen Use, Lung Function Decline, and Long-Term Survival in Children with Cystic Fibrosis. **Annals of the American Thoracic Society**, 15(4):485-493.

- Ghorbel, I., Chaabane, M., Elwej, A., Kallel, C., Kamounm N. G. and Zeghal, N. (2017). Extra Virgin olive oil mitigates hematotoxicity induced by acrylamide and oxidative damage in adult rats. **Pharmaceutical and Biomedical Research**, 3(1): 34-40.
- Gomaa, S. (2017). Immunomodulatory and hematological effects induced by diclofenac, ibuprofen or paracetamol toxicity in Swiss albino mice. **European Journal of Biological Research**, 7 (4): 348-359.
- Gomaa, S. (2018). Adverse effects induced by diclofenac, ibuprofen, and paracetamol toxicity on immunological and biochemical parameters in Swiss albino mice. **The Journal of Basic and Applied Zoology**, 97 (5):1-9.
- Gul, A., Qamar, K. and Asad, A. (2019). Effect of green tea on ibuprofen induced proximal tubular necrosis in kidney of adult rat. **Rawal Medical Journal**. 44(2): 406-409.
- Higuchi, K., Umegaki, E., Watanabe, T., Yoda, Y., Morita, E., Murano, M., Tokioka, S. and Arakawa, T. (2009). Present status and strategy of NSAIDs induced small bowel injury. **Journal of Gastroenterology**, 44(9): 879–888.
- Hil'ovská, L., Jendželovský, R. and Fedoročko, P. (2015). Potency of non-steroidal anti-inflammatory drugs in chemotherapy. **Molecular and Clinical Oncology**, 3(1):3-12.
- Lichtenberger, L. M., Zhou, Y., Jayaraman, V., Doyen, J. R., O'Neil, R. G., Dial, E. J., Volk, D. E., Gorenstein, D. G., Boggara, M. B. and Krishnamoorti, R. (2012). Insight into NSAID-Induced Membrane Alterations, Pathogenesis and Therapeutics: Characterization of Interaction of NSAIDs with Phosphatidylcholine. **Biochimica et Biophysica Acta**, 1821: 994–1002.
- Martini, W.Z., Deguzman, R., Rodriguez, C.M., Guerra, J., Martini, A.K., Pusateri, A.E. and Dubick, M.A. (2015). Effect of Ibuprofen Dose on Platelet Aggregation and Coagulation in Blood Samples from Pigs. **Military Medicine**, 180(3): 80-85.
- Mokhtari, T., Osman, H. H., El-Kenawy, A. El. And Dashti, N. (2019), Ameliorative effect of virgin olive oil against nephrotoxicity following sub-chronic administration of ethephon in male rats. **Journal of Traditional and Complementary Medicine**, doi:https://doi.org/10.1016/j.jtcme.2019.08.005.
- Najafian, M., Nowroznjhad, M.J., Arasteh, A., Najafian, Z. and Najafian, B. (2017). Protective Effect of Cinnamon Extract on Ibuprofen-Induced Hepatotoxicity in Rats. **Lorestan University of Medical Sciences**, 19(4):102-112.
- Necib, Y., Ahlem, B., Sakina, Z., Cherif, A. and Mohamed, S. B. (2013). Effect of Virgin Olive Oil (*Olea europea*. L) on Kidney Function Impairment and Oxidative Stress Induced by Mercuric Chloride in Rats. **American Journal of Biochemistry and Biotechnology**, 9(4): 415-422.
- Ogueji, E.O., Nwani, C. D., Iheanacho, S. C., Mbah, C.E., Okeke, C.O., and Yaji, A. (2018). Acute toxicity effects of ibuprofen on behaviour and haematological parameters of African catfish *Clarias gariepinus* (Burchell, 1822). **African Journal of Aquatic Science**, 43 (3): 293-303.
- Orinya, O. A., Adenkola, A. Y. and Ogbe, R. J. (2016). Haematological and biochemical studies on the effect of diclofenac sodium on Wistar Rattus Norvegicus. **International Journal of Biological and Chemical Sciences**, 10(5):2231–2242.
- Ramprabhu, R. A., Prathaban, S., Nambi, A. P., Balasubramanian, N. B. and Dhanapalan, B. (2001). Endoscopic evaluation of gastric mucosa after oral administration of ibuprofen in dogs. **Veterinarski Arhiv**, 71(1): 47-51.
- Rincón-Cervera, M.A., Valenzuela, R., Hernandez-Rodas, M.C., Marambio, M., Espinosa, A. and Mayer, S. (2016). Supplementation with antioxidant - rich extra virgin olive oil prevents hepatic oxidative stress and reduction of desaturation capacity in mice

- fed a high-fat diet: Effects on fatty acid composition in liver and extrahepatic tissues. **Nutrition**, 32:1254-67.
- Rita, I.U., Alaeto, V.C., Udegbumam, S.O. and Offor, G. E. (2008). Investigation of the analgesic and systemic effects of ibuprofen in rabbits. **Veterinaraski Arhiv**, 78(6): 467-476.
- Saravanan, M., Devi, K. U., Malarvizhi, A. and Ramesh, M. (2012). Effects of Ibuprofen on hematological, biochemical and enzymological parameters of blood in an Indian major carp, *Cirrhinus mrigala*. **Environmental Toxicology and Pharmacology**, 34(1): 14-22.
- Schellack, N. (2014). Cardiovascular effects and the use of nonsteroidal anti-inflammatory drugs. **South African Family Practice**, 56(1):16-20.
- Shafi, M., Umesh, K.G., Najmus, S., Omer, K.B., Badru-Duja, F. and Arshad, W. (2012). Haemato-Biochemical Studies on Diclofenac, Ibuprofen and Nimesulide Induced Toxicity in Broilers. **Environment and Pollution Technology An International Quarterly Scientific Journal**, 11(4): 649-652.
- Siroka, Z. and Svobodova, Z. (2013). The toxicity and adverse effects of selected drugs in animals—overview. **Polish Journal of Veterinary Sciences**, 16(1): 181–191.
- Storniolo, C. and Moreno, J. (2016). Effect of extra virgin olive oil components on the arachidonic acid cascade, colorectal cancer and colon cancer cell proliferation. **Grasas y Aceites**, 67:159.
- Visioli, F. and Galli, C. (1999). The effect of minor constituents of olive oil on cardiovascular disease: New findings. **Nutrition Reviews**, 56: 142-147.
- Yokoyama, H., Ito, N., Soeda, S., Ozaki, M., Suzuki, Y., Watanabe, M., Kashiwakura, E., Kawada, T., Ikeda, N., Tokuoka, K., Kitagawa, Y. and Yamada, Y. (2013). Influence of non-steroidal anti-inflammatory drugs on antiplatelet effect of aspirin. **Journal of Clinical Pharmacy and Therapeutics**, 38(1): 12-15.

تأثير زيت الزيتون في التسمم الدموي المستحدث بواسطة الأيوبروفين في ذكور الأرانب

رأفت محسن حسين سالم

د. عبدالله أحمد بابصلي

د. عبدالرحمن سالم عمر ياسين

الملخص:

يُعد الأيوبروفين من الأدوية الستيرويدية المضادة للالتهابات، ويوصف بأنه عامل مسكن للألم وخافض للحرارة، وقد ارتبط استخدامه هذا بعدد من التأثيرات الضارة. أجريت هذه الدراسة لمعرفة التأثيرات السامة التي يحدثها الأيوبروفين في مكونات الدم الخلوية في ذكور الأرانب، وتقدير الدور الفعال لزيت الزيتون في تقليل تلك السمية.

تم اختيار ثمانية عشر من ذكور الأرانب تزن ما بين (900-1000 جم) عشوائيًا من السوق المحلي. تم تقسيم عينة الدراسة على ثلاث مجموعات: ستة أرانب كمجموعة ضابطة أعطيت الماء المقطر عن طريق الفم مرة واحدة يوميًا لمدة 30 يومًا، ستة أرانب أعطيت عن طريق الفم (40 مجم/كجم) أيوبروفين مرة واحدة يوميًا لمدة 30 يومًا، وستة أرانب أعطيت عن طريق الفم (40 مجم/كجم) أيوبروفين و ٢ مل/كجم من زيت الزيتون مرة واحدة يوميًا لمدة 30 يومًا. في نهاية التجربة تم التضحية بالأرانب جميعها، وجمعت عينات الدم منها. تم تقدير كتلة خلايا الدم الحمراء ومؤشراتها، عدد خلايا الدم البيضاء الكلي وعددها التفرقي، فضلًا عن العدد الكلي لصفائح الدم وذلك باستخدام جهاز تحليل الدم الذاتي.

أظهرت نتائج الدراسة أن الأيوبروفين بجرعة 40 مجم / كجم تسبب في حدوث انخفاض معنوي ($P < 0.001$) في كتلة خلايا الدم الحمراء ومؤشراتها وتعداد صفائح الدم، وارتفاع معنوي في العدد الكلي لخلايا الدم البيضاء واضطراب في العد التفرقي لها عند مجموعة الأيوبروفين فقط مقارنة بمجموعة السيطرة. وكان لاستخدام زيت الزيتون تأثير إيجابي ضد السمية الدموية التي أحدثها الأيوبروفين، إذ سجلت النتائج تحسنًا في مستوى مكونات الدم التي تمت دراستها في مجموعة الأيوبروفين وزيت الزيتون مقارنة بمجموعة الأيوبروفين.

خلُصت الدراسة إلى أن تناول زيت الزيتون بانتظام قد يكون مفيدًا في تحسين معايير الدم؛ إذ يحمي من التسمم الدموي الحاصل من الأيوبروفين. هناك حاجة إلى دراسة تفصيلية أخرى على المستوى الجزيئي لمعرفة الآلية الدقيقة للسمية الدموية للأيوبروفين.

الكلمات المفتاحية: الأيوبروفين، زيت الزيتون، التسمم الدموي، الأرانب.