# Effect of Magnetic Water on Some Histological Properties in *Cyprinus carpio* L. 1758.

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**Abstract**

During the priod from 15-6-2010 till 15-9-2010 50 fishes *Cyprinus carpio* L. was bought from one of fish farms in Al-Mosaab region and transferred to Agriculture Research Directorate/ Ministry of Science and Technology. The fishes were divided into two groups, the first group (n = 25) was given a normal tap water and regard as control group, where as, the second group was given magnetic–treated water with 1000 gauss. The present study included the histological properties of magnetic water on some organs of *Cyprinus carpio* (Liver, Kidney and muscles) which included dilatation and congestion of central vein and hepatic sinusoids. Also, A ptosis, Apoptosis in some of hepatic cells. the histological section of the kidney showed melanomacrophages, slight cellular swelling, hyper cellularity of glomerular tuft and collecting tubules. Also, hyperplastic epithelium (finger like project in their lumen), while muscle sections showed separation of muscle bundle and extensive cellular infiltration mainly macrophages, lymphocytes and plasma cells.

**Key words:** *Cyprinus carpio*, Histological Effects and Magnetic Water.

# تأثير الماء الممغنط في بعض الصفات النسجية لسمكة الكارب الاعتيادي *Cyprinus carpio* L. 1758.

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**الخلاصة**

خلال المدة المحصورة من 2010/6/15 الى 2010/9/15 أستعملت 50 سمكة من أسماك الكارب الاعتيادي من إحدى المزارع السمكية في منطقة المسيب والتي نقلت الى دائرة البحوث الزراعية/ وزارة العلوم والتكنولوجيا، قسمت الأسماك الى مجموعتين، كل مجموعة 25 سمكة، المجموعة الاولى هي مجموعة سيطرة رويت من ماء الحنفية، والمجموعة الثانية رويت من ماء معالج مغناطيسيا وبشدة 1000 كاوس. تضمنت الدراسة الحالية بيان تأثير في بعض الصفات النسيجية لبعض أعضاء سمكة الكارب (الكبد ، الكلية ، العضلات) وتضمنت النتائج توسع وإحتقان الوريد المركزي والجيوب المركزيه، حدوث ال A ptosis and Apoptosis في بعض الخلايا الكبدية، بينما في المقاطع النسيجيه للكليه لوحظ إرتشاح ال melanomacrophages ، تورم خلوي خفيف، زيادة الخلايا في اللمه الكبيبيه والنبيبات الجامعه، كذلك لوحظت زيادة في الظهاره البلاستيكيه على( شكل أصابع في تجويف الكليه)، واخيراً في مقاطع العضلات شوهد إنفصال الحزم العضليه وإرتشاح خلوي واسع يتألف بصوره رئيسيه من الخلايا البلعمية اللمفاويه، وخلايا البلازما.

**الكلمات المفتاحية:** سمكة الكارب الاعتيادي، التأثيرات النسيجيه والماء الممغنط.

## Introduction

Fishes are considered as resource of protein, fat, phosphate, iron, calcium, amino acids and vitamins (Zatev *et al*., 1986). Fishes are characterize by high percentage of clear meat more than in beef lamb (red meat), the percentage about 50 -70% (FAO, 1983). So, the food value of fishes are more higher cheaper (Muhsen, 1988). Water is the blood of life, it is needed to transport compounds via the blood, it maintains cellular structural integrity, regular temperature, etc.,magnetic healing appears to date to Greece (Markov, 2007). The property of magnetism is present in very living cell (Jolanta *et al*., 2001) in the recent years. Also, several studies have suggested possiple bio – effect of magnetic fields on human healh (Trachenko and Semyonova, 1995). According to many researches, the equilibrium of living cells can be restored with the help of magnets (Gu, 1992), may be this comes from the fact that, water and water solution passes through magnetic field acquire finer and more homogeneous structures, which increase the fluidity, dissolving capability for various constituents like minerals and vitamins and consequently improves the biological activity of solution, affecting positively the performance of human, animals and plants (Trachenko and Semyonova, 1995). The aim of this study is to observe histolological properties of magnetic water in some organs of *Cyprinus carpio*.

## Materials and Methods

The present study included 50 fishes *Cyprinus carpio* L. 1758, were recieved from one of fish farm in Al-Mseab region, during the period from 15/6/2010 till15/9/2010 these samples were transferred alive to the research laboratory by plastic containers. Total and standard length were taken and fishes were weighted by balance type Mettler PE3600 gm. the range and (mean) of total length was 9.5-11.5 (10.23 cm.), the range and (mean) of weight was 20-30 (24.44 gm.), their age 2-3 months (Abed Al-Razak, 1987). Fish samples were divided into two groups: Treatment group included 25 fishes supplied with 1000 gauss (M.T.W.) and control group included 25 fishes supplied with tab water (C.T.W.). Fishes were put in glass pools at 24-25° C, pH about 7.5 and oxygen 7.5 mg/L and feed by pellet.

## Preparation of histological sections

A pieces of treated and controlled organ (kidney, liver and muscle) was taken for preparation of histological sections according to Carleton method (1967). The samples were fixed by formalin solution 10% for 24-48 hours. The fixed samples were transferred and processed through ascending grades of alcohol, dried in a wax miscible agent and impregnated in wax. Sectioning was carried out on a rotary microtome at 5mm. Sections were floated on warm water at 48°C and mounted on chemically clean slides coated with egg albumin. The mounted, unstained sections were dewaxed in three stages of xylene at 1 minute each and actual staining was carried out using the haemoxylin and eosin staining technique (Roberts, 1978).Stained mounted sections were examined under light microscope for good ones that were selected for photomicrography. Photographs were taken at 40 magnification of microscope eye piece using the camera at 50mm focal length.

## Results and Discussion

Together with the developed method, water, fish food and mall ish should be magnetically treated, our technology of magnetic treatment provides the oxygen content of water not less than 5 mg/L without application of aeration system. Also, magnetic field destroys bacteria in water, resulting in a decrease of disease in fishes by more 3 times (MTC, 2006),while treating fish food and small fish with a magnetic field, weight gain in fish increase by approx. 2.2 times and taste properties of fish also improve.

Treated group liver in revealed dilatation and congestion of central vein and hepatic sinusoids associated with presence of inflammatory cells mainly polymorph nuclear cells and macrophages in their lumen as was shown Fig. (1), other finding recorded vacuolar degenerative changes mainly hydro pic in nature, in addition mononuclear cells infiltration in liver parenchyma tissue mainly macrophages and plasma cells. Also, showed chromatin continuation (A ptosis) and showed program cells death (Apoptosis) in some of hepatic cells as illustrated in Fig. (2), while in control group showed slight dilatation and congestion of central and hepatic sinusoids as illustrated in Fig. (3). The magnetized water could have a main effect through increase blood flow to the internal organs (liver), increase in RBCs and hemoglobin whereas arrived high percentage of oxygen and food to organs, due to removal of deposits and toxins from blood flow which lead to more metabolic activity and reduced catabolic effect (Tischler, 2003 and Rokicki, 2006).while the sections of kidney of treated group showed aggregation of melanomacrophages between renal tubules and slight cellular swelling also glomeruli shoappeered with hyper-cellularity of glomerular tuft as represented in Fig. (4), moreover collecting tubular showed some of hyperplastic epithelium (presence of finger like projection in their lumen) with increase in number of goblet cells Fig. (5).whil the control group revealed normal appearance of glomeruli and tubules whith revealed some parts of hemopoitic tissues Fig. (6). In according with the properties described of magnetized water many therapeutic results have been imported in kidney stone reduction and decreased kidney rigidity, ingestion of 50 ml magnetized water every 10 minutes for 8 to 10 times has been effective for the treatment of urinary retention. Finally the effecton Muscles revealed of separation of muscle bundle by edematous exudate accompanied with extensive cellular aggregate consist mainly of macrophages, lymphocytes and plasma cells Fig. (7). Also, showed congestion of blood vessels associate with hemorrhagic areas well seen in other section, while normal appear of muscle bundle present in control Fig. (8), although some bundle showed slight degeneration changes. The magnetic water increased muscle tone for animals given magnetized water. Skeldon, (1990) explained that great absorption of mineral salts in the magnetic water treatment made the more susceptible to penetrate the cellular membranes and in hence best benefit then great development of weight gain with improved renal function. Also, the magnetic treatment lead to develop the growth ratio due to its potential effect in the blood for increase $O_2$ supply and great nutrition in the fish tissues which lead to more metabolic activity and reduced catabolic effect. In addition the magnetic technology play important role in the stimulate thyroid gland function by increase the thyrotrophic stimulate hormone (TSH) of pituitary gland for releasing more thyroxin which lead to increase the metabolic activity of liver, kidney, heart and skeleton muscles as well as increase absorption of monosaccharide and fatty acid together with protein synthesis mainly (RNA synthesis) which result in great in hence development of tissue growth as Gold-Aque explained (2005). Finally, the results of histopathology examination revealed mononuclear cells infiltration mainly lymphocytes and plasma cells which indicate good immune response of treated groups (Al-Mufarrej *et al*., 2005).

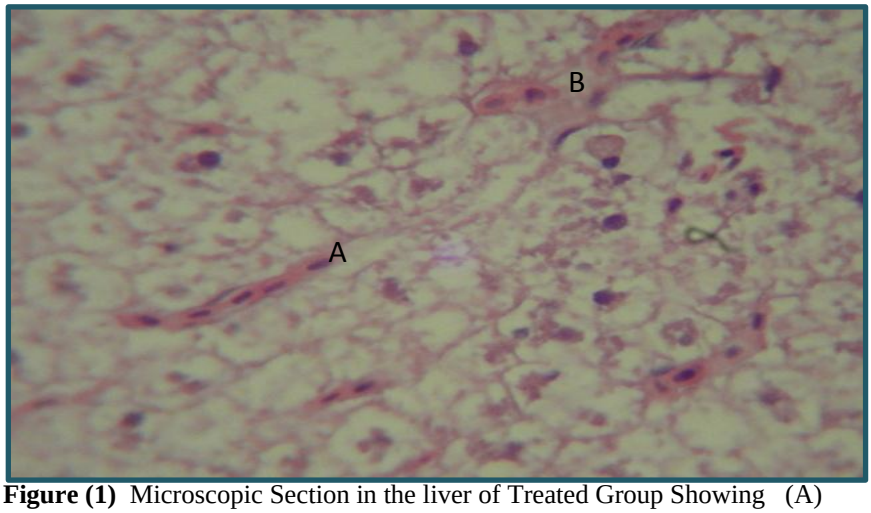


**Figure (1)** Microscopic Section in the liver of Treated Group Showing (A) Dilatation and Congestion of Hepatic Sinusoids and (B) Infiltration of Plasma Cells (H and E, X400).

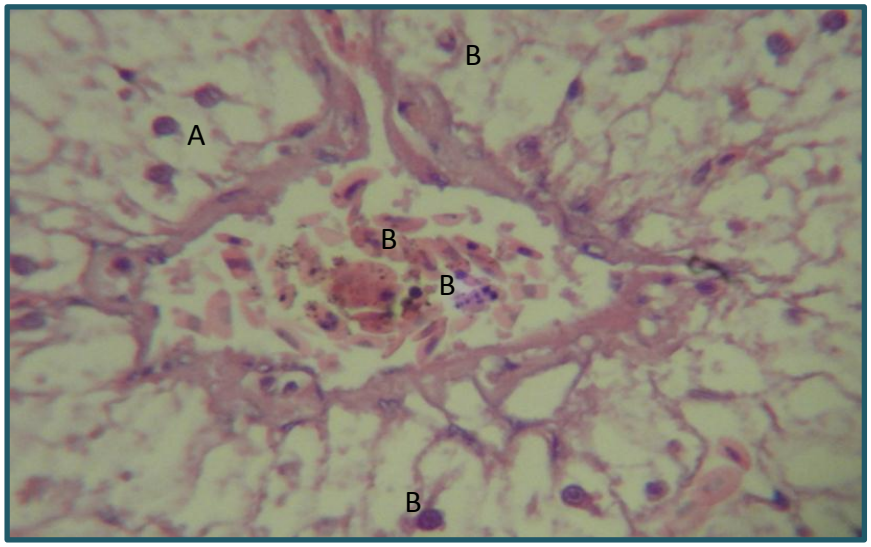


**Figure (2)** Microscopic Section in the Liver of Treated Group Showing (**A**) Apoptosis (Program Cell Death) in Hepatic Cells and (**B**) Chromatin condensation A ptosis , Polymorph Nuclear Cells PMNC and Macrophages Cells (H and E, X400).

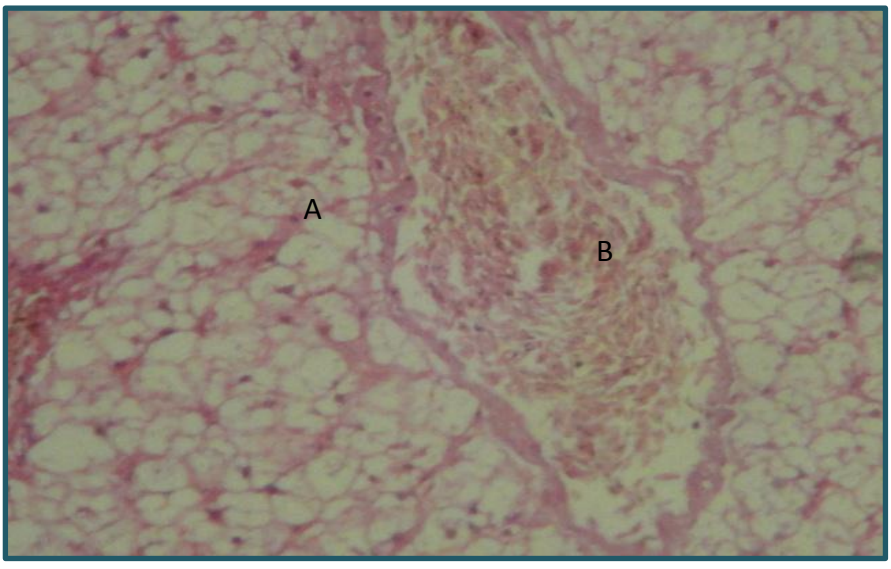


**Figure (3)** Microscopic Section in the Liver of Control Group Showing (**A**) Slight Dilatation and (**B**) Congestion of Central and Hepatic Sinusoids (H and E, X400).

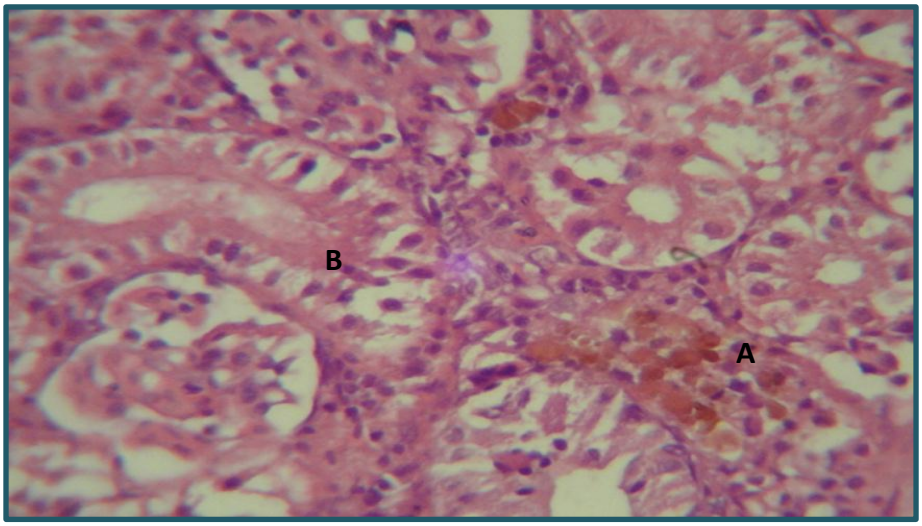


**Figure (4)** Microscopic Section in the kidney of Treated Group Showing (**A**) Melanomacrophages and (**B**) Cellular Swelling (H and E, X400).

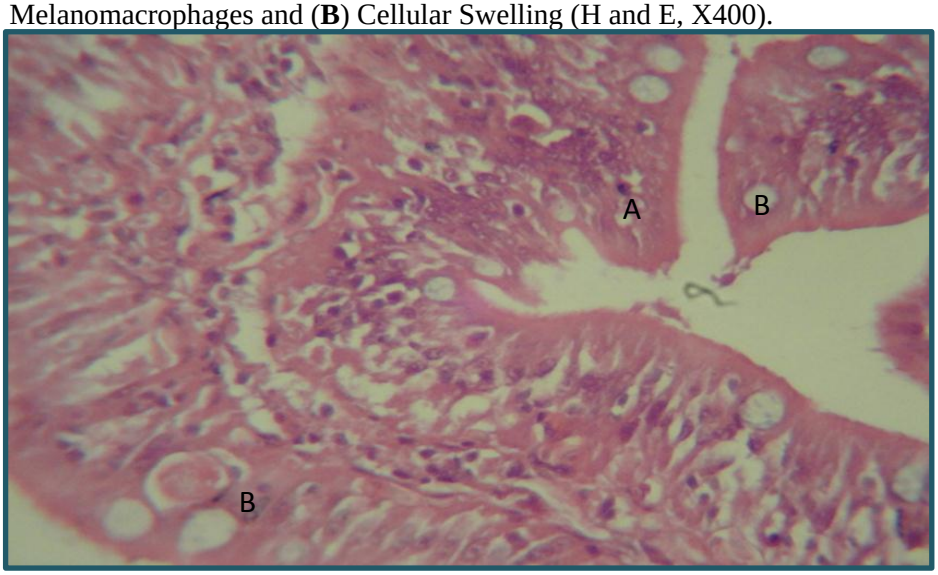


**Figure (5)** Microscopic Section in the kidney of Treated Group Showing (**A**) Hyperplastic Epithelium, (**B**) Increasing |Number of Goblets Cells (H and E, X400).

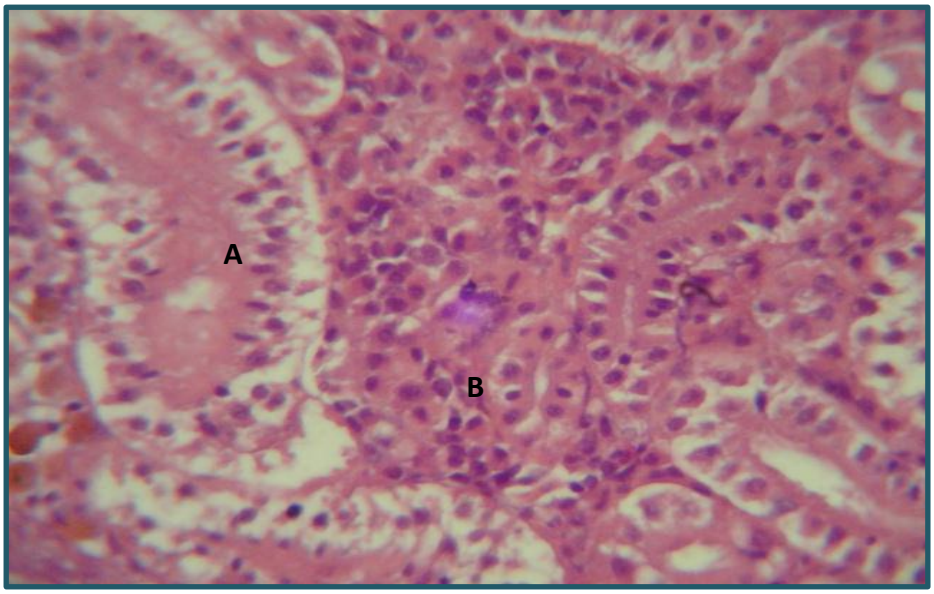


**Figure (6)** Microscopic Section in the kidney of Control Group Showing (**A**) Normal of glomeruli and Tubules , (**B**) Hemopoitic Tissues (H and E, X400)

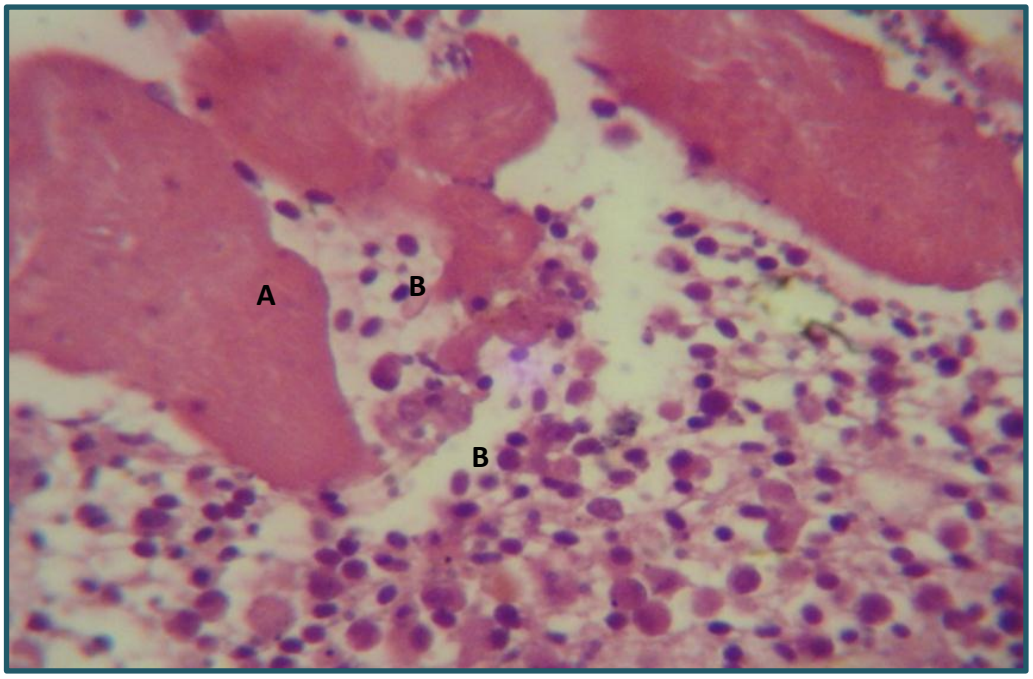


**Figure (7)** Microscopic Section in the Muscles of treated Group Showing (**A**) Separation of Muscles Bundles and (**B**) infiltration of Plasma Cells and Macrohages (H and E, X400).

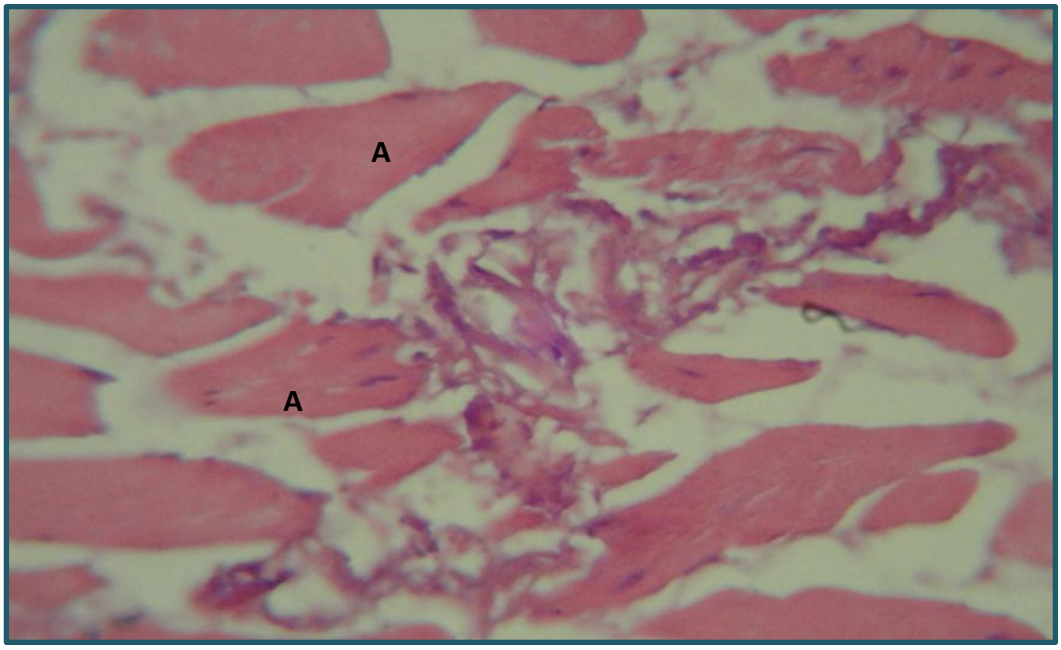


**Figure (8)** Microscopic Section in the Muscles of Control Group Showing (A) Normal Muscle Bundles (H and E, X400).

**References**


Abud Razzaq, H. ,(1987) Biologic of Fish, Basrah Univ. Press, 355. (In Arabic).

Al-Mufarrej ; Al-Batshan, H. ; Shalaby, M. and shafey, T.,( 2005) The Effect of Magnetically Treated Water on the Performance and Immune System of Broiler Chicken. International Journal of Poultry Science. 4(2), 96-102.

Carleton, H.M. , (1967) Histological Technique, 4th edn., Oxford Univ. Press, New York., 432.

FAO. , (1983) Freshwater Aquaculture Development in China, FAO Fish, Tech. Pap. (215), 125.

Gold-Aque, (2005) Water Magnetisers, (http://www.gold-aqu.com).

Gu. Q. ,(1992) Quantum Theory of Biophoton Emission, In: Recent Advances in Biophoton Research and its Application, Popp, F Li K, and Gu Q. (eds).World Scientific, Singapore, London, Hongkong., 59-112.

Jolanta, J.; Janina, G.; Marek, Z.; Elizibieta, R.; Mariola, S. and Marek, K. ,(2001) Influence of 7mt Static Magnetic Field and Irons Ions on Apoptosis and Necrosis in Rat Blood Lymphocytes J.Occup Health . 43(4), 379-381.

Markov, M.S. ,(2007) Magnetic Field Therapy: A Review.Electromagn. Bio. Med. 26(1), 1- 23.

Mohsen, K.A.,(1988) Culture and Management of Fish Farms, Basrah Univ. Press, 329 (In Arabic).

MTC. ,(2006) Biological and Therapeutic Function of Magnetized Water, Magnetic Therapy Learning Center, www.magnetictherapyfacts.org

Okano, H. and Ohkubo, C. ,(2001) Modulatory Effects of Static Magnetic Fields on Blood Pressure in Rabbits, Bioelectromagnetics. 22(6), 408-418

Roberts, R.J. ,(1978) Fish Pathology. Bailliere Tindal, London. , 318

Rokicki, R. ,(2006) Magnetic Fields and Electro Polished Metalic Implants, Medical Device and Diagnostic Industry, (info@electrobright.com).

Skeldon, P., (1990) Green Descaling with Black Magic, Process Eng. London. 71(7), 57-61.

Tischler, M. ,(2003) The Magic of Magnets, The Science Instruments Company and Biomagnetics International, Text Book.

Tkachenko, Y. and Semyonova, N. ,(1995) Your Way to Health: Magnetic Water Plus Separate Nutrition in: Mysteries of Magnetic Energies a Collection of Scientific Works on the Usage Magnetic Energies in Medical Practice, Yurip, Tkachenko(ed), Printing Emirates, Printing and Publishing-Sharjah, UAE. Moscow, Russia. Sochi, Russia. Dubai, UAE. 1995, part 6, 225-244.

Zatev, F.A.; Cazevater, A.F.; Macrova, T.A.; Monther, L.; Basevalov, F.N. and Lankov, L.N. ,(1986) Technology of Fish Products, Translated by Hindi, M.J. Basrah Univ. Press, 853. (In Arabic).