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Effect of Magnetic Water on Physical Properties of Different Kind of Water, and Studying Its Ability to Dissolving Kidney Stone

Dr. Gaafar M. Moosa [1] M.Sc. jabbar Hussain. Khulaef [2] Ali Chaloob Khraibt [3] Niehad Raheem Shandi[3]
Dr. Mohamed S.K Al Braich [4]
1.Department of Basic Sciences /Dental College /Baghdad University
2.Applied Science Dept. / University of Technology
3.Ministry of Science of Technology Environment and Water research director
4.Department of Basic Sciences /Dental College /Baghdad University

Abstract
In this work for measuring pH, TDS, and conductivity of water there are two regions, first at time less than 15min increases rapidly with increase magnetic field intensity, the second region at time more than 15min approximate saturation result. Same result was achieved on CaC_2O_4 solutions at the same conditions, which indicate that the best result we can gate at minimum exposure time, the best result of TDS can get at time less than 2min
Keywords: magnetic water, total dissolved salts

1-Introduction

Water is the most needed for our lives, and for all the living organisms such as animals and plants, so life is too impossible on the Earth without water (X. F. Pang et al ,2008) .Water molecule is easily consisting of two Hydrogen and one oxygen atoms covalently bounded, the resulting molecule is stable: satisfies the octet rule, has no unpaired electrons, and does not carry a net electrical charge (S. R.M, 2004) .When the water is treated using magnetic field, the covalent bound will broke leading to absorbed more energy causing to reduce the bounded between water molecules and increasing electrical decay which effected crystal decay. The molecules of a material could be either polar or no polar.

The molecules of a material could be either polar or no polar. We can change it from no polar to polar under influence of a magnetic field, When a no polar molecule becomes polarized they will be charges, this charge will pulling them together(C. Jack Quiun,1997*).* Magnet also reduces hydrogen-oxygen bond angle within the water molecule from 104.45^o to 103^o(M. V. And Reminisce. H, 2001). Many researchers confirm that increasing the health of human body or flies (H. Smith), or total fruit yield like tomatoes(Esitken, A., Turan, M, 2004), or the effect on the number and dry weight of sunflower plan(Turker, M. Temirci, C., Battal, P., Erez, M.E,2007) are due to magnetic field. Effect of the direct impact of a constant magnetic field on wastewater properties modification was investigated. Wastewater from two sources [differing in physical and chemical properties] was used in the experiment. Analyses regarded the impact of a constant magnetic field on the properties of wastewater prepared from powdered milk and on the composition of sewage taken directly from municipal sewage system.(M. Krzemieniewski, 2004). Another scientist has study the relation between roots and soil, and they obtain high resolution 3D architecture of roots growing in natural soil (Pohlmeier, A. et al, 2010).and (Pohlmeier, A et al, 2012a). While another study effect of magnetic water on growing seeds of Tomatoes in loamy sand and sandy loam soils in Zubbair and Safwan district in governorate of Basrah. They obtain height, vegetative growth, flowering, yield, weight and volume of tomato (Abdul–KareemFadhilAl–Maaroof, 2007).

YadollahpourAli et al, al says that Mtechnolog effected by restructures water molecules into tiny as a hexagonal stricture cluster which make it easy to penetrate the membranes of plant and animal cell (Stafford Lowe 1996). water is important for our human body; it is required for blood, the lymphatic system, skin and muscles. The pH of a sick human patient is more acidic. So by using alkaline Magnetize water, it raises the pH of our body, which is useful in energy-building, activating, that make it important in reducing blood pressure, and breaking up kidney and gall Stones (Ahmed Ibrahim Mohamed 2017).

Magnetic water has a great effect on growth and quality improvement of Poultry, by Reducing mortality and sick cases of flock, Increase in the feed conversion coefficient, and Increase in the performance efficiency factor. (Janet Forsythe 2007)

2- Experimental

Solution Preparation

In this work we studied the effect of applied magnetic field at variable intensity with different exposing time. The solutions used are distilled and tap water, calcium oxalate. The tap water was used because it is the drinking water, and the calcium oxalate is the main consistent of both kidney and bladder stone. The salts solutions were prepared by dissolving 20 mg of CaC_2O_4 in 200 ml of distilled and tap water, to assure complete dissolution

using a magnetic stirrer for a period of 1 h at room temperature

2-1-Setup Experimental

The experimental setup used in this work consists of a glass tube 300ml, and two fixed magnetic field (3000, 5000G), we used two type of water (distilled & tap water).All the samples contain 200ml of tested water in glass tube, then we put the tube on the magnet for variable time.

2-2-PH of Solutions

The pH values of the solutions were measured using pH meter (PHM84 radiometer Copenhagen) both before exposing to the magnetic field and after exposure to different magnetic field strengths varying from (3000 to 5000G) at time range varied from (2-30min).

2-3-Electrical Conductivity of Solutions

The different electrical conductivities of the solutions before and after exposing to magnetic field were measured by using portable EC meter HI98303 Hanna, this measurement was achieved when the magnetic field varied from (3000 to 5000G) at time range varied from (2-30min) for tap7&distilled water .

2-4-Total Dissolved Salts of Tap Water (TDS)

The total dissolved salts before the magnetization was measured by portable TDS meter HI98301, the total dissolved salts of tap and distilled water measured at different magnetic field strength (3000-5000G) at exposure time varied from (2-30min). This measurement was achieved on CaC_2O_4 solutions at the same conditions

2-5-Surface Tension Measurement

Water surface tension was measured using two methods. In the first method a sample of 50 ml was examined by surface tension measurement device KSV Instrument LTD-series SIGMA 70 3D, using Wilhelm plate. Then the same sample was examined using capillary tube method, with 1 mm diameter glass tube. All the experiments and the sample analysis were conducted in ambient temperature of 26± ˚C.

3-Result & Discussion

Figure (1a, 1b) shows the influence of exposing time at fixed (B) value and influence of exposing (B) at fixed time value. It is clear that pH value increases with exposing time this is due to the decreasing in the hydrogen ion concentration, while pH value increases with increasing magnetic field for distilled water is due to the polarization of water molecules and the decreasing of hydrogen ion concentration the water molecules will arrange in one direction. This mode of arrangement is caused by relaxation bonds, then the bond angle decreases to less than 105° *Stafford Lowe [1996]*, leading to a decrease in the Consolidation degree between water molecules, and increase in size of molecules. For tap water a great change in the pH values about six time at increases (B) can see clearly as in Figure (1b)such behavior could be attributed to the solubility limit of the dissolved salts present in the tap water.

Figure (2a, 2b) shows the change in the electrical conductivity of distilled and taps water with magnetic field intensity (3000-5000G) at variable exposing time. The curve consists of two distinguished parts, the first one for t≤ 10min the electrical conductivity increase with increasing time due to removing salt; to remove soluble salts from soil by Magnetizing irrigation water, in the first leach ate total soluble salt is higher than the last leach ate. So the efficiency of magnetizing water with high saline irrigation water is less than that of low saline on irrigation water. *Ahmed Ibrahim Mohamed [2013]*. The second one for t >10min the electrical conductivity tend to saturate with no any change.

Figure (3a) shows the effect of the variable time and (B) value on the TDS of distilled water .From the curve it is clear that for exposing time less than 5 min. the rate of dissolving is slower than for exposing time > 5 min where the rate is much greater. There is some sort of saturation compared with the effect of variable magnetic field, it is clear that the magnetic field has higher influence on TDS. Such behavior could be attributed to the variable degree of dissociation of the constituent salts.

Figure (3b) shows the effect of the exposing time and (B) value on the TDS of tap water. The curve consists of two parts with different ratios of dissolving salts per unit magnetic field. The first part at time ≤10min is related to the higher solubility salts; hence, the influence of magnetic field 5000G is greater than for 3000G. The second part at time less than 10min is belongs to the low solubility salts and the influence of the magnetic field is less.

Surface tension measurements at magnetic field (3000-5000G) and variable exposing time show a sharp decrease till 5min, after that almost saturate as shown in figures (4a, 4b), with a general trend of decreasing in the surface tension with increasing magnetic field is due to the attractive force between water molecules due to the applied magnetic field because of increases of polarized effect and the changes in the distribution of

molecules in magnetized water. This will in turn reduce the surface tension value of water. When water contains dissolved salts, the surface tension value increases as long as the adhesion forces between water molecules and those materials are higher than the cohesion forces among the water molecules. And vice versa, if the attraction forces among water molecules higher than the attraction between the water molecules and the dissolved material, the dissolved material will move away to the surface, lowering the surface tension.

The influence of applying magnetic field on the calcium oxalate is very important, since CaC_2O_4 is the main constituent of both kidney and bladder stones. Figure (5a, b, c, d) shows the increasing in TDS versus magnetic field. The curve shows raped increasing of TDS at time (2min) and saturation takes place the magnetic field does not affect TDS and the dissolving rate increases for higher time. More probably this is related to the supplied energy from the field. Also same changing in TDS takes place for higher magnetic field 5000G with higher TDS than 3000G. We think the degree of the dissociation of CaC_2O_4 is much higher, hence, higher energies needed. Result of surface tension of calcium oxalate solution as in Figure (6a, 6b) is less than that result in Fig (4a, 4b)

4- SUMMARY

Data were presented of measurements performed on magnetic water indicate that at two mints with higher magnetic field its better in dissolving the salts that used in making kidney stone.

5- ACKNOWLEDGEMENTS

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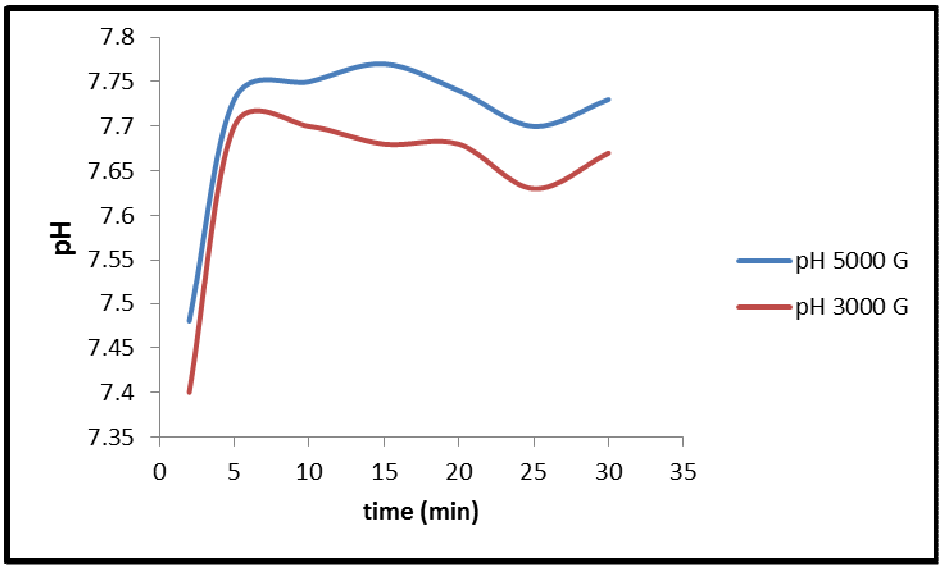


*Fig (1a) the variation of **PH** of different magnetic field at different time for distiller water*

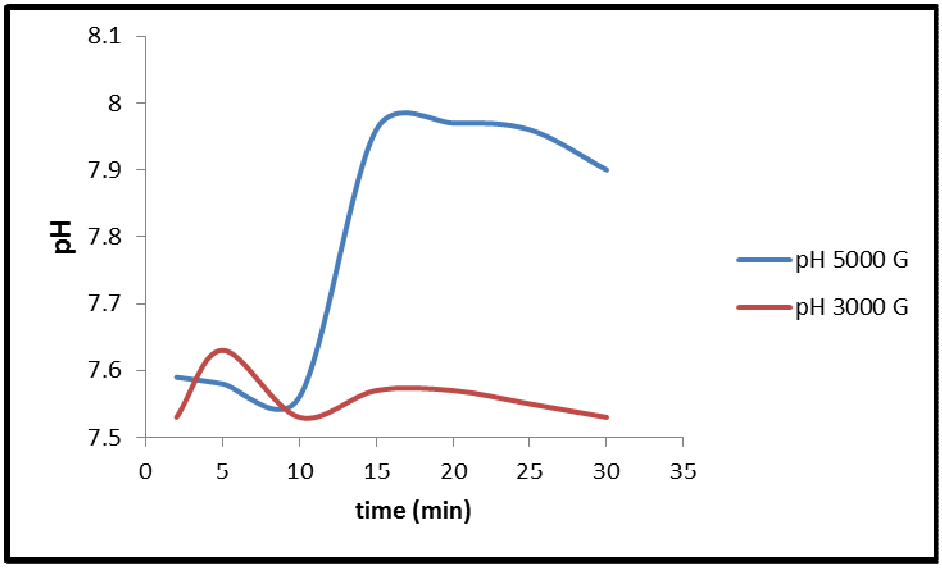


*Fig (1b) Variation of **PH** of different magnetic field at different time for tap water*

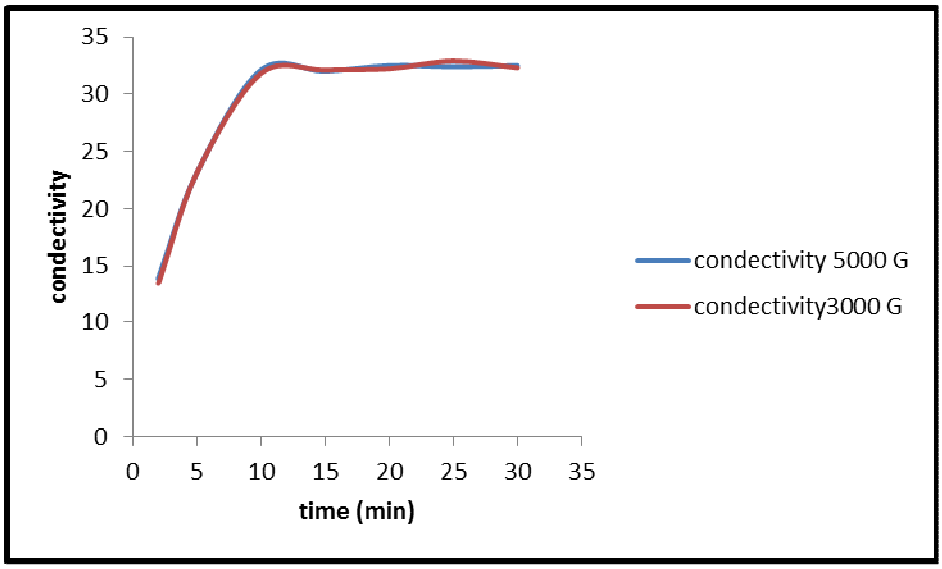


*Fig (2a)Variation of **conductivity** of different magnetic field at different time for distiller water*

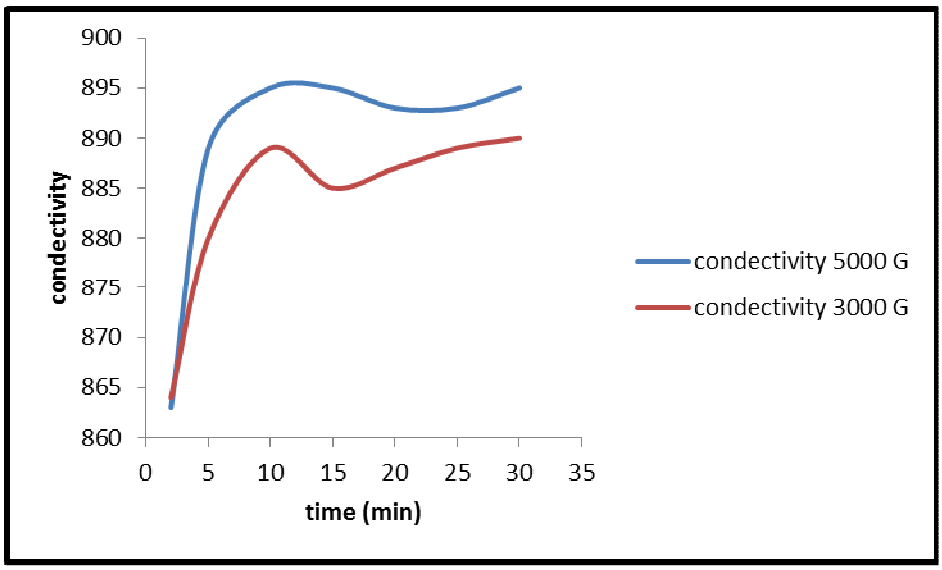


*Fig (2b) Variation of **conductivity** of different magnetic field at different time for tap water*

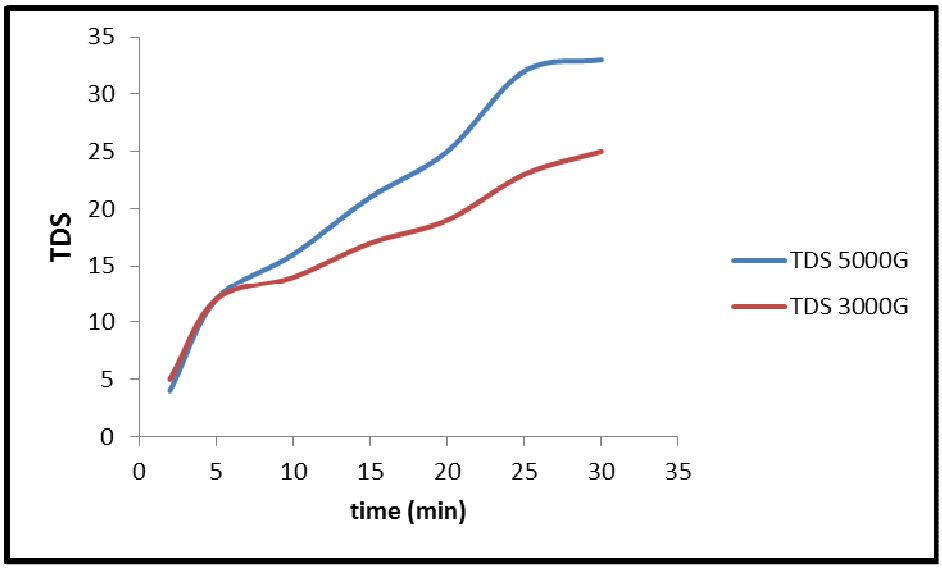
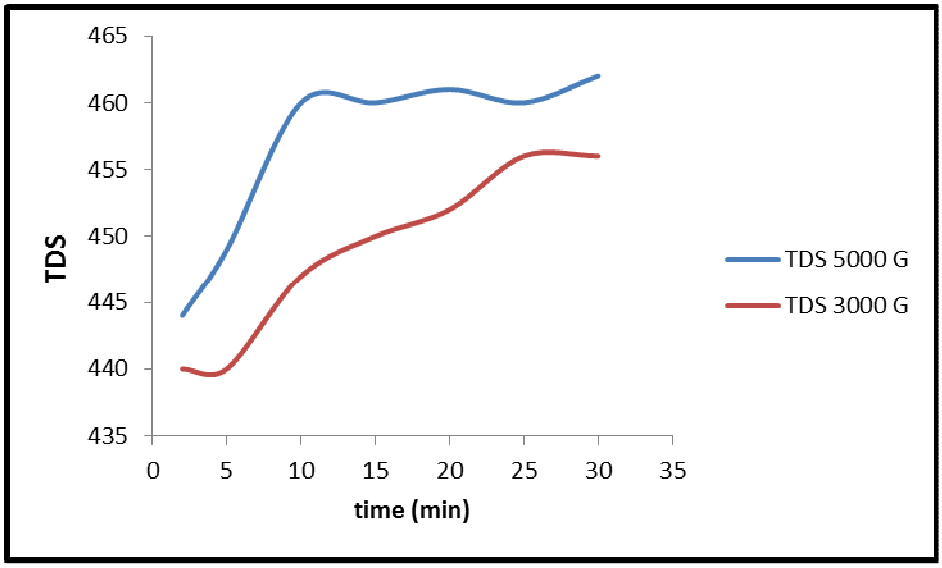


Fig (3a) Variation of total dissolves salt of different magnetic field at different time for distiller water



Fig(3b) Variation of total dissolves salt of different magnetic field at different time for tap water

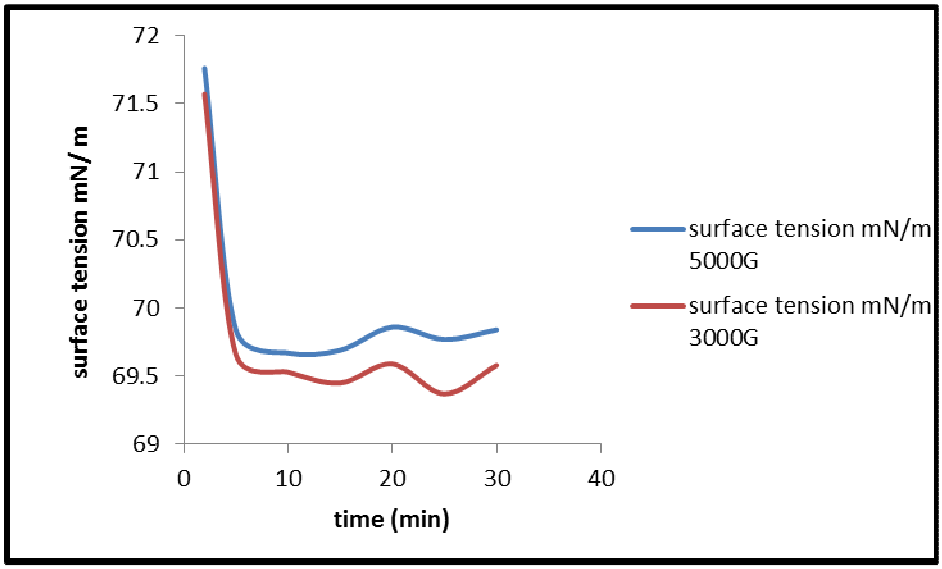


Fig (4a) *Variation of surface tension of different magnetic field at different time for distiller water*

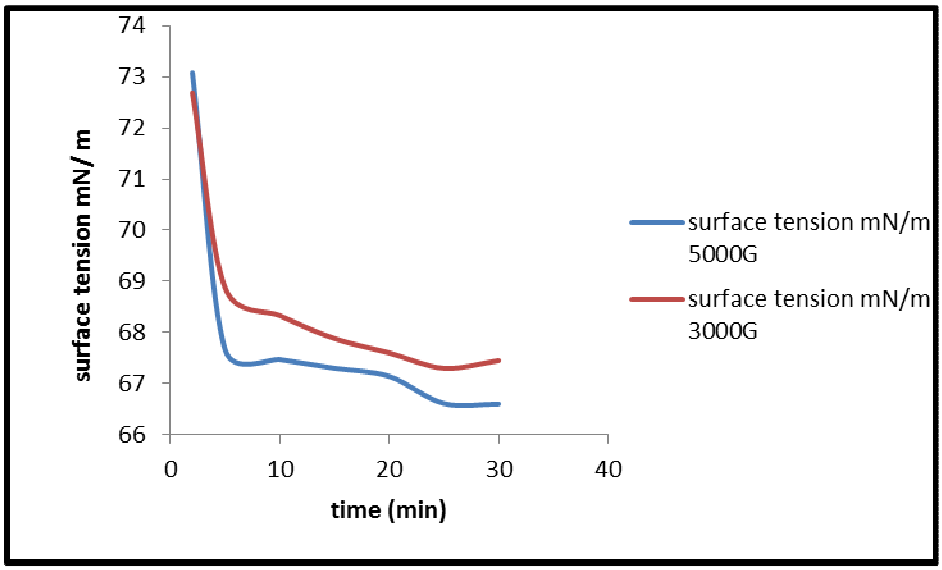


Fig (4b) *Variation of surface tension of different magnetic field at different time for tap water*

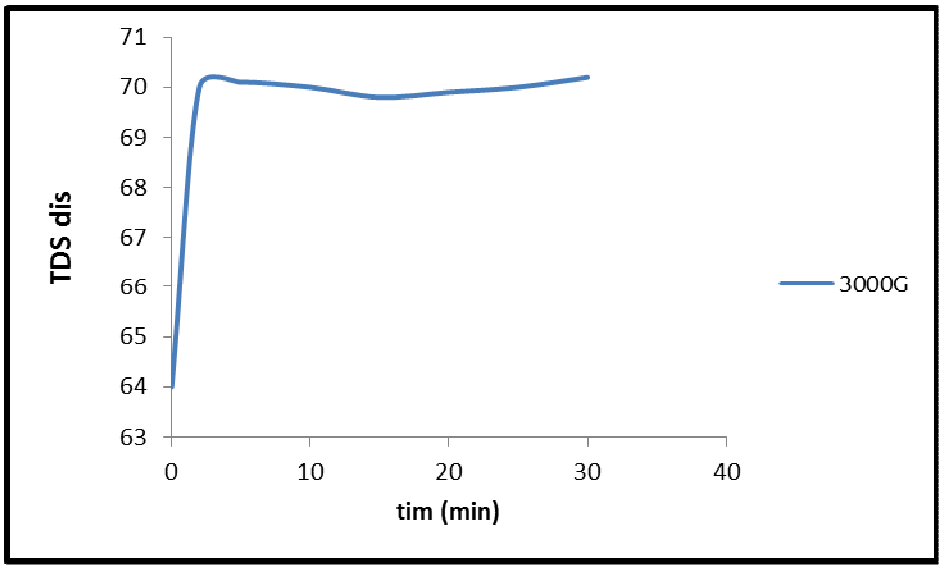


Fig (5a) *Variation of total dissolves salt of fixed magnetic field at different time for distiller water with 20 mg of* CaC_2O_4

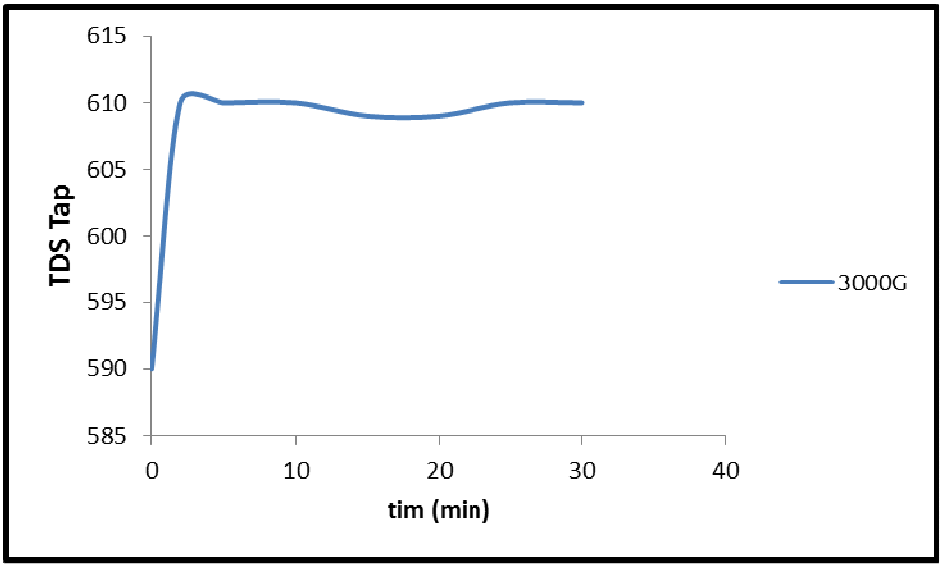


Fig (5b) *Variation of total dissolves salt of fixed magnetic field at different time for tap water with 20 mg of* CaC_2O_4

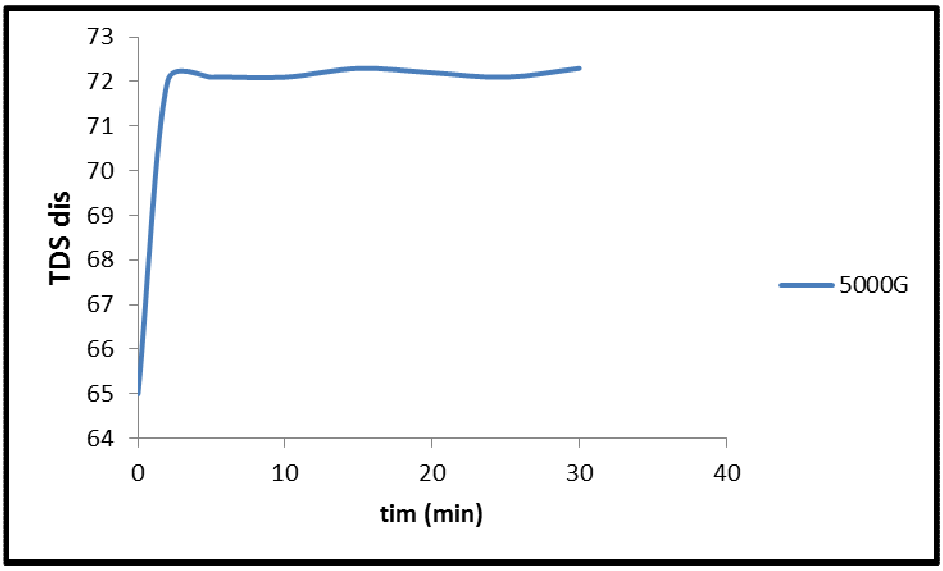


Fig (5c) *Variation of total dissolves salt of fixed magnetic field at different time for distiller water with 20 mg of* CaC_2O_4

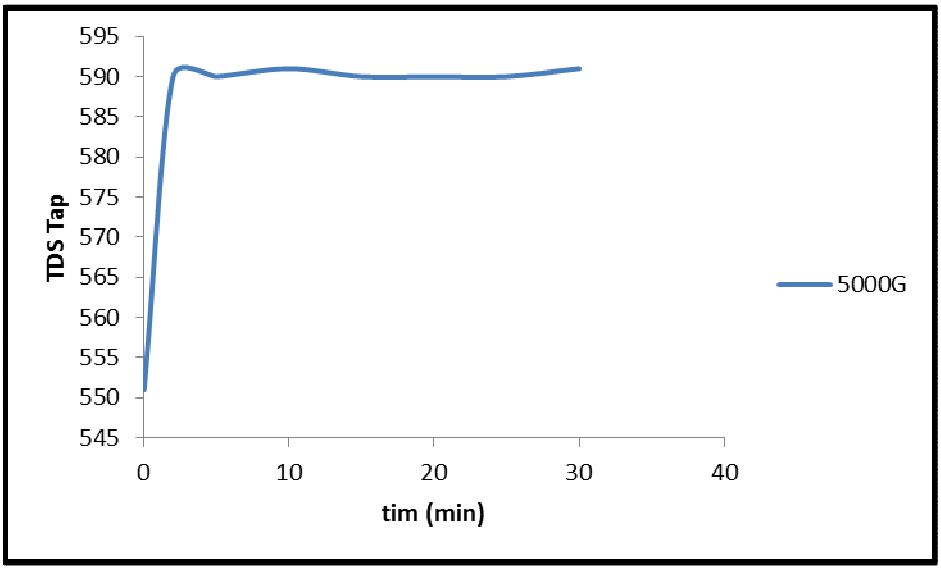


Fig (5d) *Variation of total dissolves salt of fixed magnetic field at different time for tap water with 20 mg of* CaC_2O_4

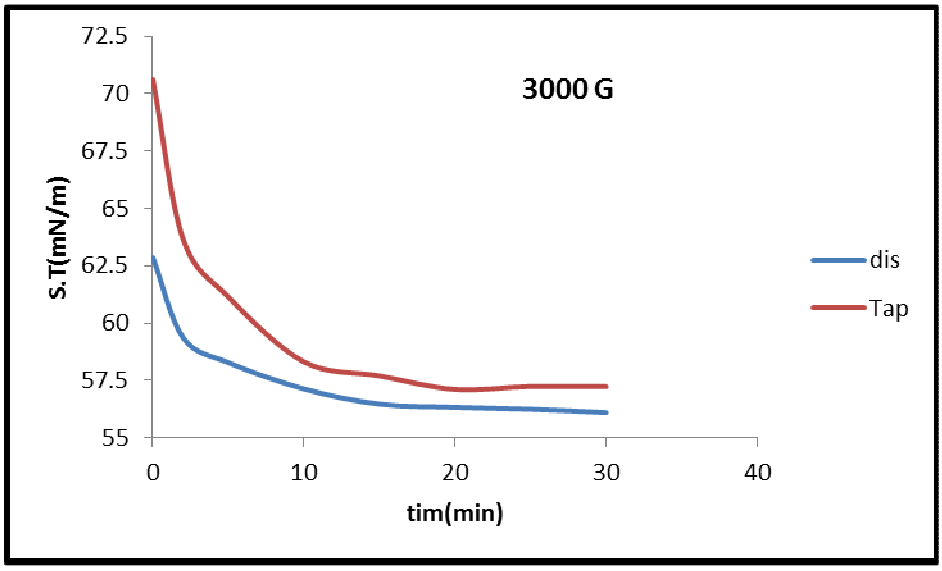


Fig (6a) *Variation of surface tension of fixed magnetic field at different time for distiller and tap water with 20 mg of* CaC_2O

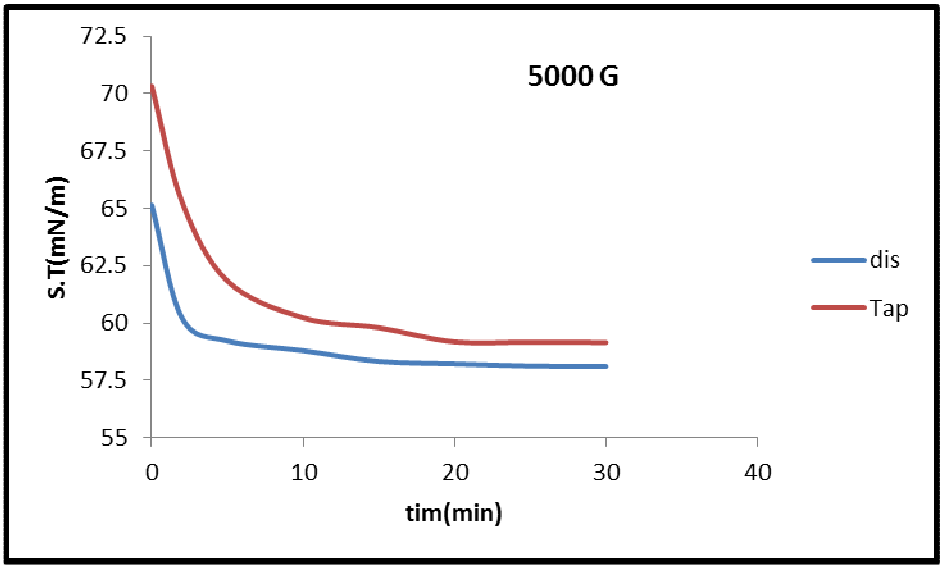


Fig (6b) *Variation of surface tension of fixed magnetic field at different time for distiller and tap water with 20 mg of* CaC_2O

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