جامعة
بنغازي الحديثة

مجلة جامعة بنغازي الحديثة للعلوم والدراسات الإنسانية

مجلة علمية الكترونية محكمة

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شروط كتابة البحث العلمي في مجلة جامعة بنغازي الحديثة للعلوم والدراسات الإنسانية

1- الملخص باللغة العربية وباللغة الانجليزية (150 كلمة).
2- المقدمة، وتشمل التالي:
- ❖ نبذة عن موضوع الدراسة (مدخل).
- ❖ مشكلة الدراسة.
- ❖ أهمية الدراسة.
- ❖ أهداف الدراسة.
- ❖ المنهج العلمي المتبع في الدراسة.

3- الخاتمة. (أهم نتائج البحث - التوصيات).
4- قائمة المصادر والمراجع.
5- عدد صفحات البحث لا تزيد عن (25) صفحة متضمنة الملاحق وقائمة المصادر والمراجع.

القواعد العامة لقبول النشر

1. تقبل المجلة نشر البحوث باللغتين العربية والانجليزية؛ والتي تتوافر فيها الشروط الآتية:

- أن يكون البحث أصيلاً، وتتوافر فيه شروط البحث العلمي المعتمد على الأصول العلمية والمنهجية المتعارف عليها من حيث الإحاطة والاستقصاء والإضافة المعرفية (النتائج) والمنهجية والتوثيق وسلامة اللغة ودقة التعبير.
- ألا يكون البحث قد سبق نشرة أو قُدم للنشر في أي جهة أخرى أو مستل من رسالة أو اطروحة علمية.
- أن يكون البحث مراعياً لقواعد الضبط ودقة الرسوم والأشكال - إن وجدت - ومطبوعاً على ملف وورد، حجم الخط (14) وبخط (Arial 'Body') للغة العربية. وحجم الخط (12) بخط (Times New Roman) للغة الإنجليزية.
- أن تكون الجداول والأشكال مدرجة في أماكنها الصحيحة، وأن تشمل العناوين والبيانات الإيضاحية.
- أن يكون البحث ملتزما بدقة التوثيق حسب دليل جمعية علم النفس الأمريكية (APA) وتثبيت هوامش البحث في نفس الصفحة والمصادر والمراجع في نهاية البحث على النحو الآتي:
- أن تُثبت المراجع بذكر اسم المؤلف، ثم يوضع تاريخ نشرة بين حاصرتين، ويلي ذلك عنوان المصدر، متبوعاً باسم المحقق أو المترجم، ودار النشر، ومكان النشر، ورقم الجزء، ورقم الصفحة.
- عند استخدام الدوريات (المجلات، المؤتمرات العلمية، الندوات) بوصفها مراجع للبحث: يُذكر اسم صاحب المقالة كاملاً، ثم تاريخ النشر بين حاصرتين، ثم عنوان المقالة، ثم ذكر اسم المجلة، ثم رقم المجلد، ثم رقم العدد، ودار النشر، ومكان النشر، ورقم الصفحة.

2. يقدم الباحث ملخص باللغتين العربية والانجليزية في حدود (150 كلمة) بحيث يتضمن مشكلة الدراسة، والهدف الرئيسي للدراسة، ومنهجية الدراسة، ونتائج الدراسة. ووضع الكلمات الرئيسية في نهاية الملخص (خمس كلمات).

3. تحتفظ مجلة جامعة بنغازي الحديثة بحقها في أسلوب إخراج البحث النهائي عند النشر.

إجراءات النشر

ترسل جميع المواد عبر البريد الالكتروني الخاص بالمجلة جامعة بنغازي الحديثة وهو كالتالي:

- ✓ يرسل البحث الكترونياً (Word + Pdf) إلى عنوان المجلة info.jmbush@bmu.edu.ly او نسخة على CD بحيث يظهر في البحث اسم الباحث ولقبة العلمي، ومكان عملة، ومجاله.
- ✓ يرفق مع البحث نموذج تقديم ورقة بحثية للنشر (موجود على موقع المجلة) وكذلك ارفاق موجز للسيرة الذاتية للباحث إلكترونياً.
- ✓ لا يقبل استلام الورقة العلمية الا بشروط وفورمات مجلة جامعة بنغازي الحديثة.
- ✓ في حالة قبول البحث مبدئياً يتم عرضة على مُحكِّمين من ذوي الاختصاص في مجال البحث، ويتم اختيارهم بسرية تامة، ولا يُعرض عليهم اسم الباحث أو بياناته، وذلك لإبداء آرائهم حول مدى أصالة البحث، وقيمته العلمية، ومدى التزام الباحث بالمنهجية المتعارف عليها، ويطلب من المحكم تحديد مدى صلاحية البحث للنشر في المجلة من عدمها.
- ✓ يُخطر الباحث بقرار صلاحية بحثه للنشر من عدمها خلال شهرين من تاريخ الاستلام للبحث، وبموعد النشر، ورقم العدد الذي سينشر فيه البحث.
- ✓ في حالة ورود ملاحظات من المحكِّمين، تُرسل تلك الملاحظات إلى الباحث لإجراء التعديلات اللازمة بموجبها، على أن تعاد للمجلة خلال مدة أقصاها عشرة أيام.
- ✓ الأبحاث التي لم تتم الموافقة على نشرها لا تعاد إلى الباحثين.
- ✓ الأفكار الواردة فيما ينشر من دراسات وبحوث وعروض تعبر عن أراء أصحابها.
- ✓ لا يجوز نشر إي من المواد المنشورة في المجلة مرة أخرى.
- ✓ يدفع الراغب في نشر بحثه مبلغ قدره (400 د.ل) دينار ليبي إذا كان الباحث من داخل ليبيا، و (200 $) دولار أمريكي إذا كان الباحث من خارج ليبيا. علماً بأن حسابنا القابل للتحويل هو: **(بنغازي – ليبيا - مصرف التجارة والتنمية، الفرع الرئيسي - بنغازي، رقم 001-225540-0011. الاسم (صلاح الأمين عبدالله محمد)**.
- ✓ جميع المواد المنشورة في المجلة تخضع لقانون حقوق الملكية الفكرية للمجلة.

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Assessment of Drinking Water Quality in the Local Market of Al Marj City during 2017

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Abstract

Water is drawn from the ground for many purposes principally community water supply, farming and industrial processes. It is easily the most important component of water reservoirs and constitutes about two third of the freshwater resources of the world, and if the polar ice caps and glaciers are not considered, ground water accounts for nearly all useable freshwater (Rast et al., 1998). Due to the lack of water resources in AlMarj City and not correspond to the international parameters, many of plastic water bottles were diffused as well as some of water purification points without monitoring of authorities. This study was conducted during the period from April to May 2017 to evaluate drinking water quality parameters in AlMarj City, comparing the results with its labels and its uses by human consumption. 24 samplings were collected from six sampling points (Al Kharropa, Al Mahadi, Khawabi, Ideal, Iceberg and AlDayapha) including two water purification points (Al Saphrani and Osman) to determine chemically in the laboratory. The physicochemical water quality parameters (T,pH,EC,TDS,TH,TA,Ca, Mg, Na and K) were examined in ApoTrabah Water Treatment Station (North of AlMarj City). The study revealed that there was a difference between the obtained results and the results on the labels. In addition, all samplings were classified as Class I with acidic values of pH. Finally, all parameters were within suitable limits of drinking water, and further monitoring for drinking water quality in the local market of AlMarj City was recommended.

Keywords: physico-chemical parameters. AlMarj City, water quality, water monitoring.

الملخص:

الماء سائل شفاف لا لون له ولا طعم ولا رائحة وله عدة صفات مميزة مثل الشفافية ودرجة الغليان والتجمد ويستخدم الماء في عدة أغراض أهمها الشرب والزراعة والصناعة ويعتبر الماء أنقى المركبات الكيميائية التي لا تسبب ضرر للإنسان و الأحياء الأخرى ويتركب الماء من عنصرين هما (الهيدروجين والأكسجين) ويقاس تركيز العناصر الموجودة في المياه بتراكيز معينة يعبر عنها (ملغم /لتر) أو جزء في المليون (ppm) نظرا لمشكلة نقص المياه في المدينة المرج وعدم مطابقتها للمواصفات العالمية لمياه الشرب مما أدى إلي انتشار العديد من قنينات مياه الشرب البلاستيكية بالسوق المحلي وكذلك بعض نقاط تنقية المياه دون رقابة أو متابعة من جهات الاختصاص. هدفت الدراسة إلي دراسة نوعية مياه الشرب المتواجدة بالسوق المحلي و مطابقتها مع المواصفات العالمية وكذلك مع النتائج المرفقة لكل عينة ومدى صلاحيتها للاستهلاك الأدمي. تم جمع العينات المائية من عدة نقاط و عددها (6) نقاط وهي: (الخروبة، المهدي، الخوابي، أيديال، إيس برغ، الضيافة) بالإضافة إلي عينتان من نقاط تنقية المياه بمدينة المرج (الصفراني لتحلية المياه، عصمان لتحلية المياه) واختبارها كيميائيا بمختبر تحلية المياه ابو ترابة (شمال مدينة المرج) وقد شملت الاختبارات الفيزيوكيميائية ما يلي: (درجة الحرارة، الرقم الهيدروجيني، الإيصالية الكهربية، الأملاح الكلية الذائبة وبعض العناصر). أوضحت النتائج وجود فروقات ما بين النتائج المتحصل عليها والنتائج المرفقة للعينات المائية. لوحظ أن أغلب قيم الأس الهيدروجيني كانت ضمن الحد المسموح به وجميعها كانت ذو وسط حامضي. كما دلت النتائج علي أن جميع العينات المائية كانت من الدرجة الأولى وأن جميع العناصر كانت ضمن الحدود العالمية المسموح بها لمياه الشرب. أوصت الدراسة بضرورة استمرارية إجراء اختبارات جودة المياه مع ضرورة المراقبة الدورية للعينات المائية الموجودة بالسوق المحلي لمدينة المرج.

INTRODUCTION

The ground water has been exploited for drinking and agricultural purposes since the earliest times. Water is drawn from the ground for many purposes principally community water supply, farming and industrial processes. It is easily the most important component of water reservoirs and constitutes about two third of the freshwater resources of the world, and if the polar ice caps and glaciers are not considered, ground water accounts for nearly all useable freshwater (Rast et al., 1998). It is customary to think of groundwater as being more important in arid and semi - arid areas and surface water as more important in humid areas. However, inventories of ground water and surface water use reveal the worldwide importance of groundwater. The reasons for this include its convenient availability close to where water is required, its excellent natural quality and the relatively low capital cost of development (Chilton, 1998). Like the other regions of the world ground water in Libya considered the chief source of useable water. However, over exploitation in northern regions of Libya has resulted in the exhaustion of the underground aquifers because over pumping of water has been greater than the compensation through deep percolation (Chapman, 1998). Since water is one of the important components of the life for all living organisms (human being - animal- plant) water enters in what is called life cycles and the living organisms get on the important causatives of the life like food, oxygen. The water considered as important nutrient media for living microorganisms such as bacteria, algae, fungi, phytoplankton and zooplankton. By the physico-chemical tests which are important tests we can determine the quality of water to ensure that it is suitable for drinking or for other uses. During these physico-chemical parameters we can evaluate the quality of water by estimating the acidity, also we can know whether the water is acidic or alkaline medium, the physico-chemical tests refer to the electro chemical effect of water (ability of water to electrical conduction) also by these tests we can estimate whether the water is oxidant or reductive and we can easily know the quantity of carbonate and bicarbonate salts also monitoring undesirable elements such as iron and the effect of iron on the taste and the biological products (growth of iron bacteria). The performance of the physico-chemical tests basically depends upon the measurement of these parameters found in water and comparing the permissible limits with the international standards (WHO).The main objectives of this study were to study of physicochemical parameters and chemical ions of drinking water quality in the local market of AlMarj City during 2017, measurement of these chemical parameters found on the labels bottles and comparing the permissible limits with the international standards (WHO), and consequently the utilization of this water on human consumption. Therefore, physico-chemical parameters of water bottles in the local market of Al Marj City were studied in order to elucidate the role of these chemical factors in changing of the water quality. The specific physico- chemical parameters include water temperature (T), pH, electrical conductivity (EC), total dissolved salts (TDS), alkalinity (TA) and hardness (TH) as well as chloride (Cl), calcium (Ca), magnesium (Mg), sodium (Na) and potassium (K) in the water found in the local market of Al Marj City.

Drinking Water Quality

The water used for human consumption must be collected from pure sources. The water has to be analyzed chemically and biologically (pathogenic bacteria and viruses) as well as clear and without turbidity. For drinking water, the

physicochemical analysis must be examined weekly at least, and contain the lowest levels for turbidity, odor and taste.

Physicochemical Parameters for Drinking Water

Drinking water must be clear, transparent, save to consumers and don't cause any harmful diseases. Haman being can taste and smell water. There were a lot of international parameters for drinking water, but the most important parameters were World Health Organization (WHO).

MATERIALS AND METHODS

Site Description:

Al Marj City located North East of Libya, and represent an important part of Green Mountain Area. It is located at latitude 30^0 15, 32^0 30" N and longitude 21^0 00, ^{0}21 30" E. It has an altitude of 270 – 340 m above sea level , and has an area 450 km^2 (Shelmani, 2006). This study was conducted during the period from April to May 2017 to evaluate drinking water quality parameters in AlMarj City, comparing the results with its labels and its uses by human consumption. 24 samplings were collected from six sampling points (Al Kharropa, Al Mahadi, Khawabi, Ideal, Iceberg and AlDayapha) including two water purification points (Al Saphrani and Osman) as shown in table 1 to determine chemically in the laboratory. The physicochemical water quality parameters (T, pH, EC, TDS, TH, TA, Cl, Ca, Mg, Na and K) were examined in ApoTrabah Water Treatment Station (North of AlMarj City) using spectrophotometer and laboratory kits. All data were compared together and with international limits (WHO).

Table (1) show the Sampling Points and Type in Al Marj City during 2017

Sampling Point	Type
AlDayapha	Water Plastic Bottle
Iceberg	Water Plastic Bottle
Ideal	Water Plastic Bottle
Al Mahadi	Water Plastic Bottle
Al Kharropa	Water Plastic Bottle
Khawabi	Water Plastic Bottle
Al Saphrani (AlKothar)	Purification Water Bottle
Osman	Purification Water Bottle

RESULTS AND DISCUSSION

Water quality assessment is critical for pollution control and the protection of surface and ground waters. Water quality rarely remains static so quality data are needed. The main factors affecting variation in quality are dilution water temperature causing variation in biological activity and oxygen solubility and seasonal changes in water inputs. The selection of parameters for water quality assessment is dependent on the type of receiving water, the nature of the discharges into the receiving water, water use and any legal designation relating to the system (Gray, 1999). The obtained data in the laboratory as well as the data on the labels of plastic bottles showed that there were differences between the results due to different of water sources and the places were chemical analysis were done.

Water Samples

The water samples were collected from eight sampling point from April to May 2017 for physicochemical analysis.

Measurements of Physico-Chemical and Chemical Parameters

The results show that there were variations in the values of physico-chemical and chemical parameters of the water samples throughout the period of study. Comparison of the data obtained from the water samples with that obtained from the labels, however, showed significant changes in the quality of water as shown in tables (2 and 3).

Temperature (°C):

Temperature affects physical, chemical and biological processes in water bodies and therefore the concentration of many variables. As water temperature increases the rate of chemical reactions generally increases together with the evaporation and volatilization of substances from the water (Chapman, 1998). Increased temperature also decreases the solubility of gases in water such as O_2,CO_2,N_2,CH_4 and others (Chapman, 1998). The results showed that the maximum water temperature was 25.3 °C (Al Kharropa), and the minimum water temperature was 22.5 ° at Iceberg and all data was within the normal range. It is clear from the obtained results that there were no significant differences in the water temperatures throughout the period of study (Fig 1).

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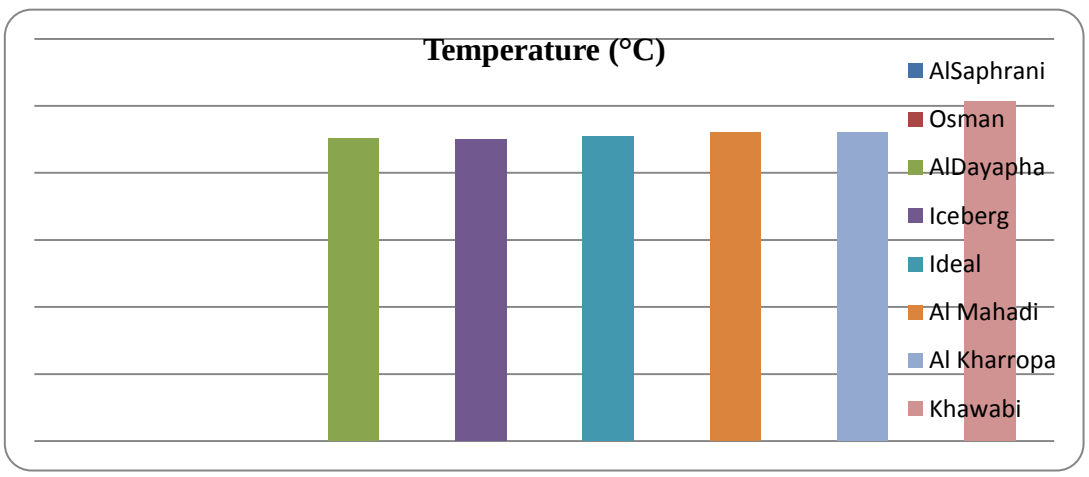

Fig (1) show Water Temperature (°C) during period of the study

Electrical Conductivity (EC) mS/cm:

Conductivity or specific conductance is a measure of the ability of water to conduct an electrical current. It is sensitive to variations in dissolved solids, mostly mineral salts (Chapman, 1998). The degrees to which these dissociate into ions, the amount of electrical charge on each ion, ion mobility and the temperature of the solution all have an influence on conductivity. It is expressed as microsiemens per centimeter (uS/cm) or desisiemens per meter (dS /m) or milli mohos/ centimeter (mM/cm) and micro mohos/ centimeter (µM/cm), it is related to the concentrations of total dissolved solids and major ions. The results showed that the maximum electrical conductivity was 200 µS/cm (Iceberg), and the minimum was 11 µS/cm (Al Mahadi) as shown in fig 2. The data was arranged descendingly respectively as follows: Iceberg (200) > Ideal (176) > Khawabi (163) > AlDayapha (85) > Al Kharropa (65.8) and Al Mahadi (11).

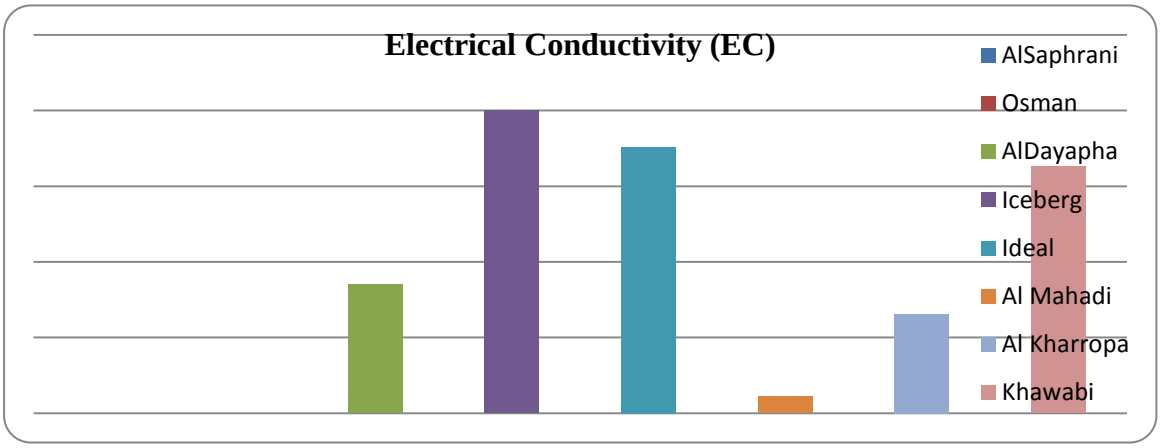

Fig (2) show Electrical Conductivity (µS/cm) during period of the study

Table (2) Show the physicochemical parameters on the water samples of AlMarj City during 2017

Chemical Parameter	Sampling Points							
	Khawabi	Al Kharropa	Al Mahadi	Ideal	Iceberg	Al Dayapha	Osman	Al Saphrani
Water Temperature (°C)	25.3	23	23	22.7	22.5	22.6	_	_
pH	6.45	6.15	5.6	6.76	6.8	6.1	_	_
Electrical Conductivity (µS/cm)	163	65.8	11	176	200	85		_
Total Dissolved Solids (TDS)	82	33	6	88	100	43	170	160
Chloride (mg/l)	49.63	21.27	3	4	13	28	6	6
Total Hardness (mg/l)	4.5	4	0.5	37.5	32.5	_	2	1.7
Total Alkalinity (mg/l)	24	8	2	80	20	8	_	_
Calcium (mg/l)	1	1	0.16	6.4	4		1	0.09
Magnesium (mg/l)	0.48	0.36	0.02	5.16	5.4		1	0.08
Sodium (mg/l)	21	5.9	1	2.6	4.1	11.2	2	2
Potassium (mg/l)	0.8	0.1	0	0.1	0.1	0.3	0	0

Hydrogen Ion Concentration (pH) value:

In much generalized terms a solution is said to be neutral when the numbers of hydrogen ions and hydroxyl ions are equal, each corresponding to an approximate concentration of 10-7 moles/l. This natural point is temperature dependent and occurs at pH 7.0 at 25Ċ. When the concentration of hydrogen ions exceeds that of the hydroxyl ions, at pH values of less than 7.0, the solution or water has acid characteristics. Conversely when there is an excess of hydroxyl ions, the pH value is greater than 7.0, the solution or water has basic characteristics and is sometimes described as being on the alkaline side of neutrality. The pH value of unpolluted water is mainly determined by the interrelationship between free carbon dioxide and the amounts of carbonate and bicarbonate present (Twort et al., 1985 and Droste, 1997). The results showed that most values were within normal range (6.5 – 8.5) throughout the study. The results also revealed that all values were acidic. The maximum hydrogen ion concentration (pH value) was 6.8 in Iceberg while the minimum value was 5.60 in Al Mahadi as shown in (Fig 3). The data was arranged descendingly respectively as follows: Iceberg (6.8) > Ideal (6.76) > Khawabi (6.45) > AlKharropa (6.15) > AlDayapha (6.10) and Al Mahadi (5.60).

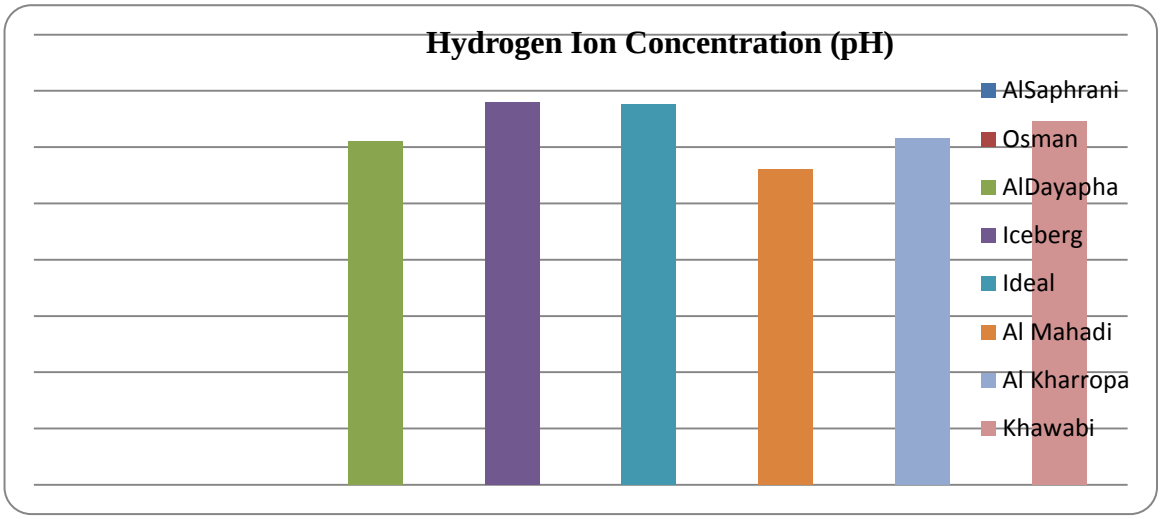

Fig (3) show Ion Hydrogen Concentration (pH) during period of the study

Total Dissolved Soilds (TDS):

The results showed that the values were classified as class I (0 – 700 mg/l). The maximum TDS value was 170 mg/l in Osman whereas the minimum value was 6 in Al Mahadi as shown in (Fig 4). The data was arranged descendingly respectively as follows: Osman (170) > Al Saphrani (160) > Iceberg (100) > Ideal (88) > Khawabi (82) > Al Dayapha (43) > Al Kharropa (33) and Al Mahadi (6).

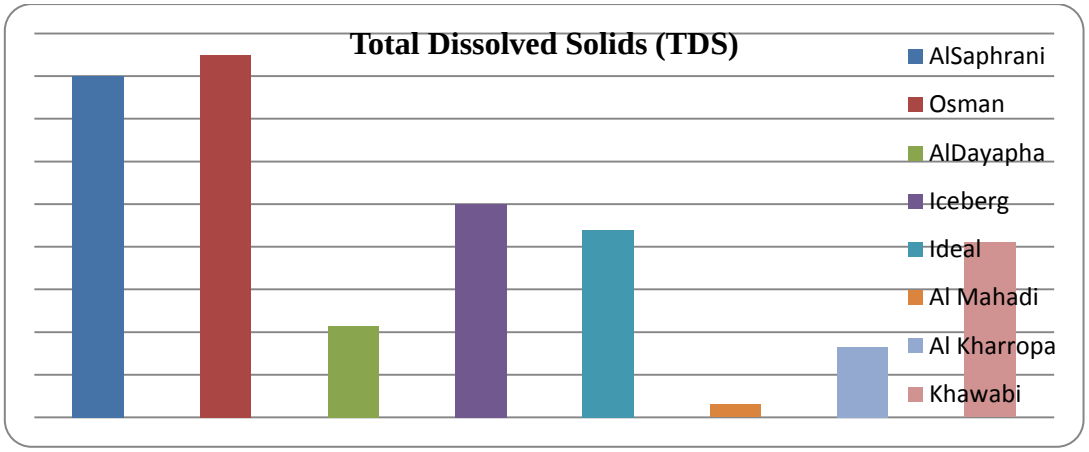

Fig (4) show Total Dissolved Solids (TDS) during period of the study

Chloride (Cl):

Most chlorine occurs as chloride (Cl ¯) in solution. High concentrations of chloride can make waters unpalatable and therefore unfit for drinking or livestock watering (Gray, 1999). The obtained data revealed that the values were within normal range (200 – 250 mg/l). The maximum value was 49.6 mg/l in Khwabi whereas the minimum value was 3.00 in Al Mahadi as shown in (Fig 5). The data was arranged descendingly respectively as follows: Khawabi (49.6) > Al Dayapha (28) > Al Kharropa (21.27) > Iceberg 13) > osman and Al Saphrani (6.00) > Ideal (4.00) and Al Mahadi (3.00).

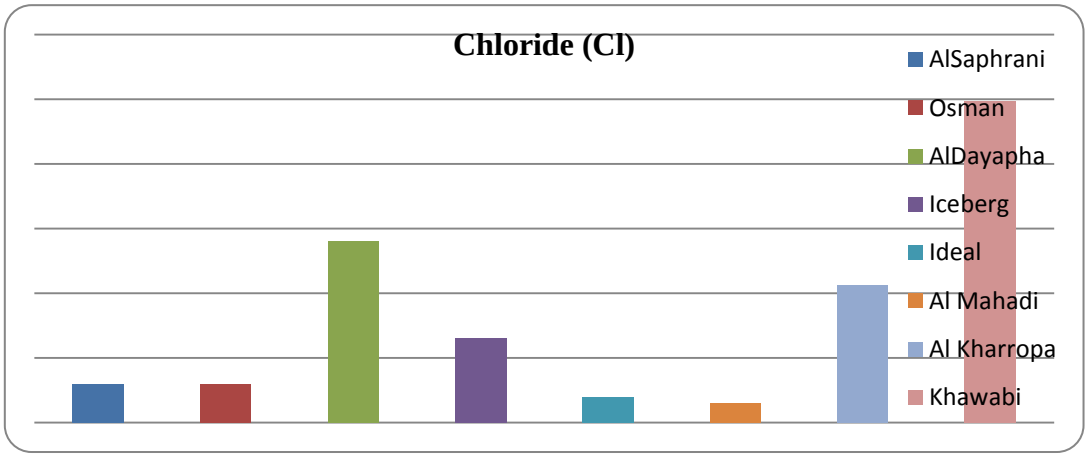

Fig (5) show Chloride Concentrationduring period of the study

Total Hardness (TH) mg/l:

The hardness of water varies from place to place reflecting the nature of the geology with which the water has been in contact. In general surface waters are softer than ground waters, although there are many extremely soft ground waters. Hardness is caused by divalent metal cations which can react with certain anions present to form a precipitate (Chapman, 1998). Figure (6) shows the monthly averages of total hardness during the period of study. The data reported in this figure shows that there were significant changes in TH of the water throughout the study period. The maximum

total hardness was 37.5 mg/l in Ideal, and the minimum value was 0.50 mg/l in Al mahadi and all data was within normal range (300 mg/l). The data was arranged descendingly respectively as follows: Ideal (37.5) > Iceberg (32.5) > Khawabi (4.50) > Al Karropo (4.00) > osman (2.00) > Al Saphrani (1.70) and Al Mahadi (0.50).

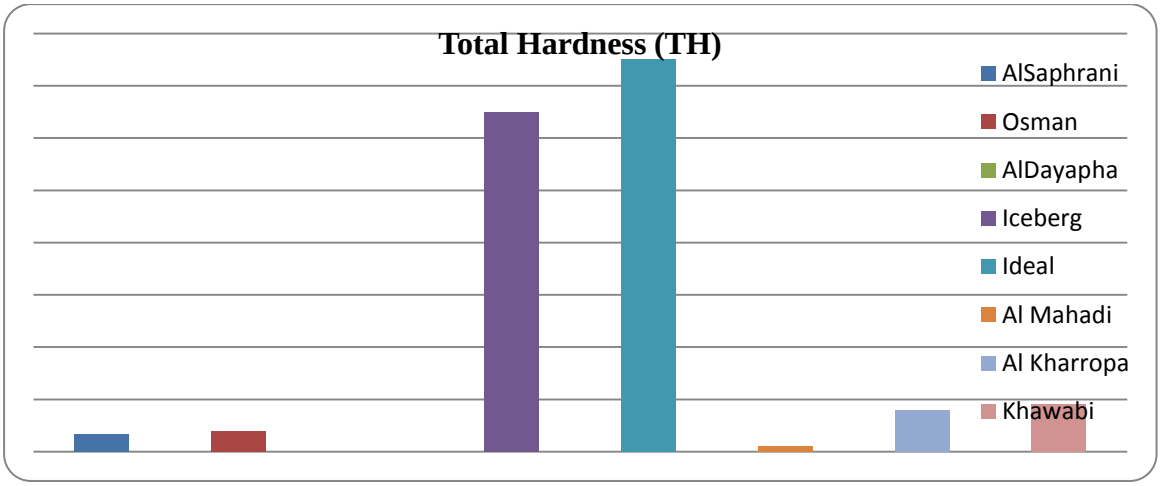

Fig (6) show Total Hardness during period of the study

Calcium (mg/l):

Calcium is found in most natural waters, the level depending upon the type of rock through which the water has passed. It is usually present as the carbonate or bicarbonate and sulphate, although in waters of high salinity, calcium chloride and nitrate can also be found (Chapman 1998). From the obtained data, the maximum value was reported in Ideal (6.40 mg/l), while the minimum value was (0.1 mg/l) in Al Mahadi (Fig7). Furthermore, all calcium concentrations were within normal limits (200mg/l). Moreover, the data was arranged descendingly respectively as follows: Ideal (6.40) > Iceberg (4.0) > Osman, Khawabi and Al Kharropa (1.0) > Al Saphrani (0.9) > and Al Mahadi (0.1).

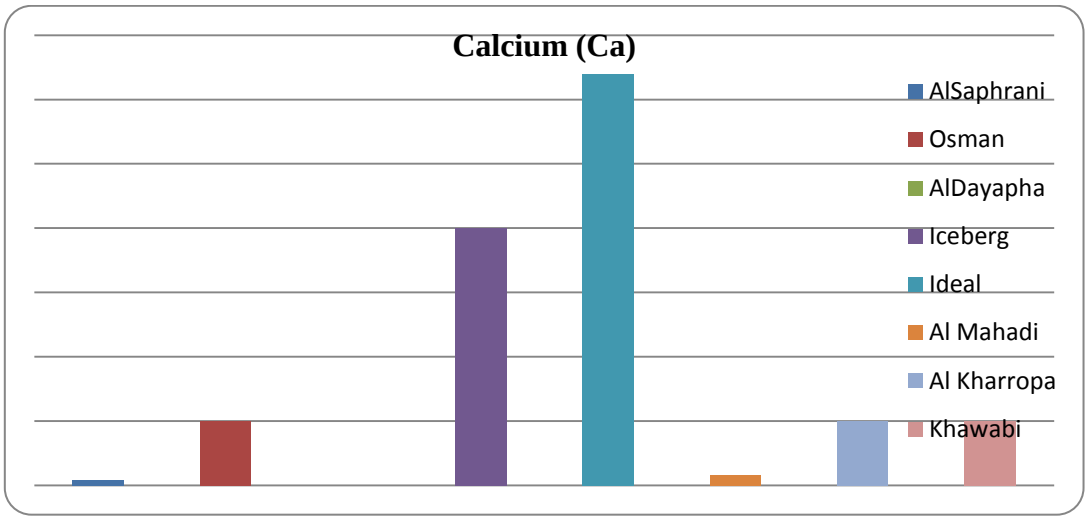

Fig (7) show Calcium Concentration during period of the study

Total Alkalinity (TA) mg/l:

Alkalinity is almost entirely due to the bicarbonate, carbonate, and hydroxide ions in the water, usually in association with calcium, magnesium, sodium, and potassium (Twort et al., 1985). Analysis often quotes alkalinity in terms of CaCO3 instead of carbonate and bicarbonate content. The data revealed that the maximum value was in Ideal (80 mg/l), while the minimum value was in Al Mahadi (2 mg/l) (Fig 8). Furthermore, all total alkalinity values were within normal limits (500 mg/l). Moreover, the data was arranged descendingly respectively as follows: Ideal (28) > Khawabi (24) > Iceberg (20) > AlDayapha and Al Kharropa (8) and Al Mahadi (2).

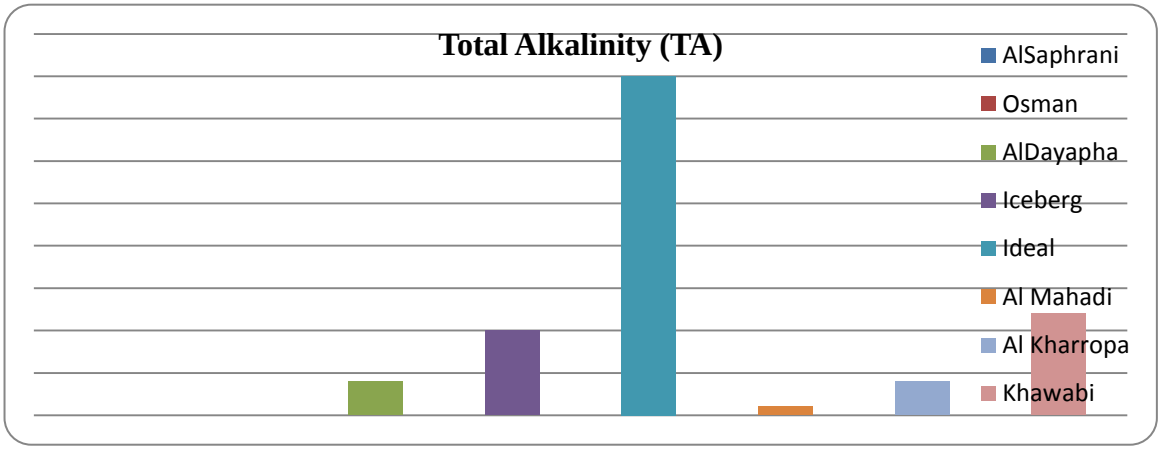

Fig (8) show Total Alkalinity during period of the study

Sodium (mg/l):

All natural waters contain some sodium since sodium salts are highly water soluble and it is one of the most abundant elements on earth (Chapman, 1992). The data exposed that the maximum sodium concentration was in Khawabi (21 mg/l), while the minimum value was in Al Mahadi (1.00 mg/l) (Fig 9). Furthermore, all sodium concentrations were within normal limits (200 mg/l). Moreover, the data was arranged descendingly respectively as follows: Khawabi (21) > Al Dayaoha (11.2) > Al Kharropa (5.90) > Iceberg (4.10) > Ideal (2.60) > Osman and ASaphrani (2.00) and Al Mahadi (1.00).

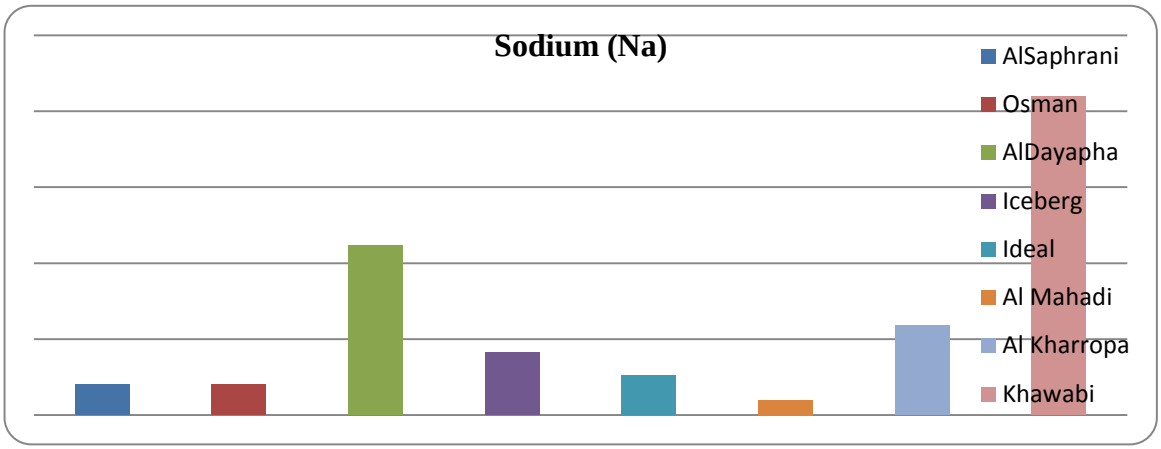

Fig (9) show Sodium Concentration during period of the study

Potassium (mg/l):

Potassium (as K^+) is found in low concentrations in natural waters since rocks which contain potassium are relatively resistant to weathering. Potassium salts are widely used in industry and in fertilizers for agriculture and enter freshwaters with industrial discharges and run off from agricultural land (Gray, 1999). From fig (10), it is clear that the maximum potassium concentration was reported in Khawabi (0.80 mg/l), while the minimum values were in Al Mahadi, Osman and Al Saphrani (0.0 mg/l). Furthermore, all potassium concentrations were within normal limits (12 mg/l). Moreover, the data was arranged descendingly respectively as follows: Khawabi (0.80) > Al Dayaoha (0.30) > Al Kharropa, Iceberg and Ideal (0.1) > Al Mahadi, Osman and Al Saphrani (0.1).

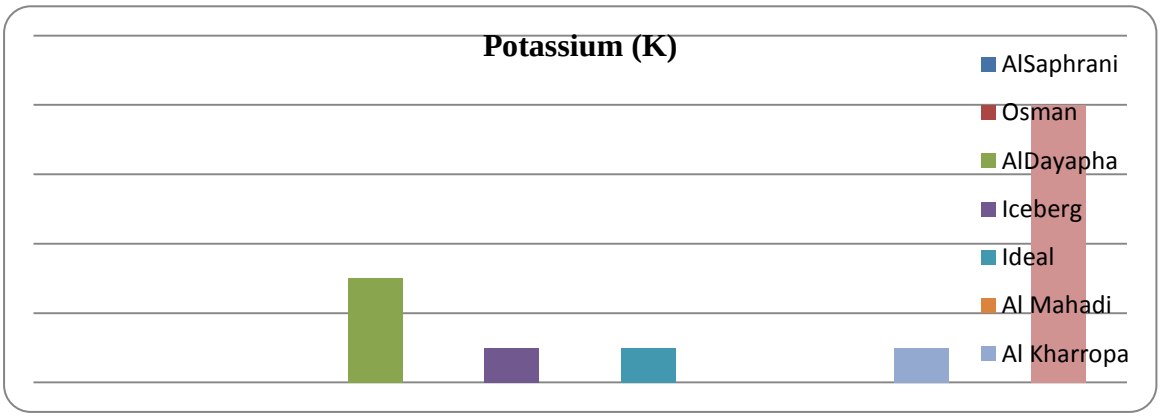

Fig (10) show Potassium Concentration during period of the study

Magnesium (mg/l):

Magnesium is common in natural waters as Mg^{2+} and along with calcium is a main contributor to water hardness. Magnesium arises principally from the weathering of rocks containing ferromagnesium minerals and from some carbonate rocks (Chapman, 1998). From the obtained data, the maximum value was reported in Iceberg (5.40 mg/l), while the minimum value was (0.02 mg/l) in Al Mahadi (Fig11). Furthermore, all magnesium concentrations were within normal limits (50 mg/l). Moreover, the data was arranged descendingly respectively as follows: Iceberg (5.40) > Ideal 5.16) > Osman (1)> Khawabi (0.48) > Al Kharropa (0.36) > Al Saphrani (0.08) > and Al Mahadi (0.02).

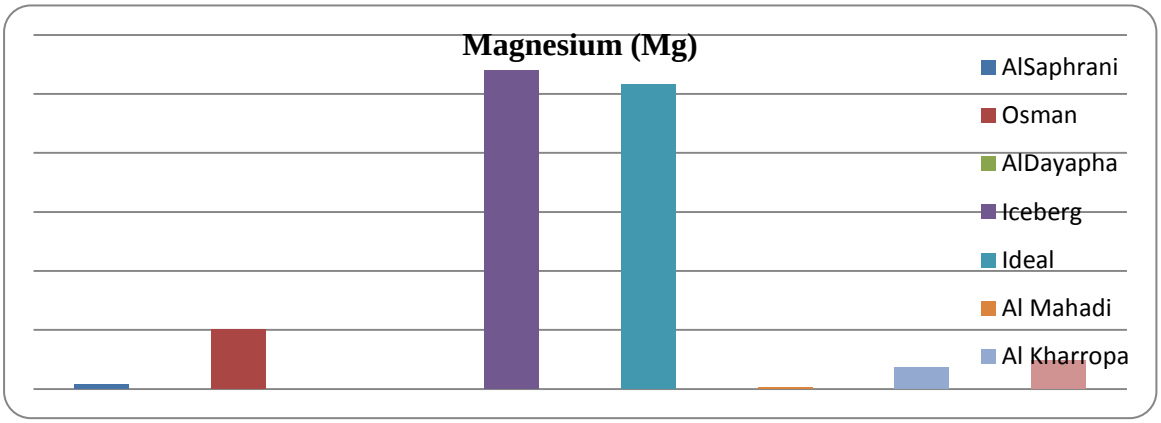

Fig (11) show Magnesium Concentration during period of the study

Table (3) Show the comparison between the obtained results and labels results of the water samples of AlMarj City during 2017

Chemical Parameter	Sampling Points													
	Khawabi		Al Kharropa		Al Mahadi		Ideal		Iceberg		AlDayapha		Al Saphrani	Osman
	Results	Labels	Results	Labels	Results	Labels	Results	Labels	Results	Labels	Results	Labels	Results	Results
Water Temperature (°C)	25.3	_	23	_	23	_	22.7	_	22.5	_	22.6	_	_	_
pH	6.45	7.5	6.15	7.2	5.6	_	6.76	7.7	6.8	7.42	6.1	7.42	_	_
Electrical Conductivity (µs/cm)	163	_	65.8	_	11	_	176	_	200	_	85	_	_	_
Total Dissolved Solids (TDS)	82	120	33	160.2	6	120.5	88	71.2	100	140.1	43	140.1	160	170
Chloride (Cl) (Mg/l)	49.63	94	21.27	3.2	3	94	4	3.1	13	42.6	28	42.67	6	6
Total Hardness (Mg/l)	4.5	_	4	_	0.5	_	37.5	70	32.5	86.25	_	86.2	1.7	2
Total Alkalinity (Mg/l)	24	_	8		2	_	80	_	20	_	8	_	_	_
Calcium (Ca) (Mg/l)	1	6	1	12	0.16	6	6.4	14.7	4	3.29	_	3.29	0.09	1
Magnesium (Mg) (Mg/l)	0.48	3	0.36	3.4	0.02	3	5.16	0	5.4	18.69	_	18.9	0.08	1
Sodium (Na) (Mg/l)	21	82	5.9	0.7	1	82	2.6	4.36	4.1	6.74	11.2	6.74	2	2
Potassium (K) (Mg/l)	0.8	0.7	0.1	0.2	0	0.8	0.1	_	0.1		0.3	0.02	0	0

All the obtained data were compared with the international limits for drinking water. In addition, all data were within normal ranges (table 4).

Table (4) The WHO, EC and Libyan Guide drinking water directive standards for the parameters from WHO, European commission and Arabic commission (Gray, 1999) and Libyan standards Guideline (Libyan National Centre for Standards, 1992).

Chemical Parameter	International Limits			
	WHO	EC	Arabian	Libyan
Colour	Unit	15		15
Turbidity	Unit	5		5
Taste	-	Acceptable	Acceptable	
Water Temperature (°C)	15 - 25	15 - 25	15 - 25	
pH	6.5 - 8.5	6.00 - 9.00	5.5 9.5	6.5 - 8.5
Electrical Conductivity (µS/cm)	1500 - 2000	1500 - 2000	2000	
Total Dissolved Solids (TDS)	1000	1000	1500	500 - 1000
Chloride (Cl) (mg/l)	200 -250	200 -250	100 - 250	200 -250
Total Hardness (mg/l)	400	300	300	200 - 500

Total Alkalinity (mg/l)	500	250	250	
Calcium (Ca) (mg/l)	200	150	200	75 - 200
Magnesium (Mg) (mg/l)	50	50	25 - 50	30
Sodium (Na) (mg/l)	200	200	200	20 -200
Potassium (K) (mg/l)	12	12	12	10 .00 - 40

CONCLUSION

From the obtained data, Al Mahadi reported the lowest values as well as Al Kharropa, Al Dayapha and Khawabi, whereas Iceberg and Ideal reported the highest values throughout the period of study. Furthermore, there were variations in the values of physico-chemical and chemical parameters of the water samples throughout the period of study. Comparison of the data obtained from the water samples with that obtained from the labels, however, showed significant changes in the quality of water.

RECOMMEBDATION

1. Performance and continuity of drinking water quality analysis to discover any harmful changes may occur on the water quality.
2. Conserve of ground water resources from pollution.
3. Monitor of the purification points, and drinking water plastic bottles in the local markets.

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APPENDICES

Appendix 1 Show Instruments Used in the Study

Figure (1) Show pH meter

Figure (2) Show Electrical Conductivity meter

Figure (3) Show Spectrophotometer (DR2800)

Figure (4) Show Flame Spectrophotometer

Figure (5) Show Titration for Total Hardness and Alkalinity