بسم الله الرحمن الرحيم

(أَوْلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَاءَاتِ وَالأَرْضَ
كَانَا رَقِيقًا فَعَلَّفُنا هُمَا
وَجَعَلْنَا مِنَ الْمَاءِ ْكُلَّ شَيْءٍ حَيٍّ إِلَّاٰ يُؤْمِنُونَ)

صدق الله العظيم

Dedication
To the soul of my uncle Kaml Osman

Elzuber

My Parents

My brothers

My colleagues and friends
I gratefully acknowledge my indebtedness to my supervisor Dr Mohamed Elmukhtar Abd Elaziz who has been a source of knowledge, advice and support. His friendly attitude has surrounded him with pleasant and qualified people who helped to create an excellent working atmosphere.

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Abstract

The objective of this study was to detect the pollutant anions in Kamleen drinking water from underground sources. Concentration levels of chloride, sulphate, nitrate, nitrite, and particularly fluoride were determined. In addition, color, turbidity, hydrogen ion concentration, electrical conductivity, total hardness, total alkalinity, and total dissolved solids were measured. Samples of groundwater were randomly collected from twenty eight different areas around central Kamleen locality during the summer season from May to August 2011.

Ion-selective electrodes methods were used to determine fluoride, chloride and nitrate. Colorimetric methods were used to determine sulphate, turbidity and also fluoride and nitrate. In comparison, sulphate content was also determined gravimetrically. Nitrite was also determined colorimetrically but using standard addition method. Chloride was also determined by titrimetric method and also total hardness and total alkalinity.

The results obtained showed that the of fluoride contents ranged from 0.01 to 1.89 ppm, chloride, 3.82 to 770.42 ppm, nitrate 8.52 to 44.00 ppm, nitrite 0.008 to 0.828ppm and sulphate ranged from 5.99 to 881.00 ppm. It was also found that hydrogen
ion concentration and turbidity were in agreement with those of the international standard except those of total dissolved solids (2070 ppm), and electrical conductivity (3105µs) in Eliedaid groundwater.

Chemical composition studies showed that the total hardness, total alkalinity nitrate and nitrite in all sites of Kamleen groundwater complied with those of the international standards of drinking water. Only one sample of Eliedaid, however, showed higher values for chloride (777.24 ppm) and sulphate (881.00 ppm) than the maximum permissible limits (250 ppm) for both ions. Up to five samples of Kamleen groundwater of Fadoul (1.69ppm), Eltakala Abashar (1.63ppm), Eltorabi Elgadida (1.89ppm), Elkasabmar (1.51ppm), Eltakala Rofaa (1.55 ppm), did not conform with the maximum permissible limit of 1.50 ppm for fluoride content in drinking water. The groundwater of these areas could be considered as unsuitable for drinking.

The groundwater of the central and far eastern areas of Kamleen locality were affected by fluoride, while those of northern and western, as indicated by the results obtained, were affected by salinity.
الخلاصة

هدفت هذه الدراسة للكشف عن الأنيونات الملونة لمياه الشرب الجوفية بمحلية الكاملين. وقد تم تعيين تركيز محتوى الكلوريد والكبريتات والنترات والفلوريد وخاصة الفلوريد. بالإضافة إلى قياس اللون والعكارة وتركيز أيون الهيدروجين والمواد الصلبة الذائبة و العسر الكلي والقلوية الكلية والموصليات الكهربائية.

وقد تم جمع العينات من المصادر الجوفية بطريقة عشوائية من ثماني عشرين منطقة مختلفه من اتجاه ووسط المحلية خلال فصل الصيف في الفترة من مايو إلى أغسطس للعام 2011 م.

وقد تم استخدام طرق الإقطاب انتقائية الأيون لتحضير محتوى الفلوريد والكلوريد بالإضافة إلى النترات. وقد تم استخدام طرق المطيافية اللونية لتعيين
محتوى الكبريتات والعكارة والنترات أيضاً. وللمقارنة تم تعيين محتوى الكبريتات بالطريقة الوزنية. وقد تم أيضاً استخدام المطيافية اللونية لتعيين محتوى النترات لكن باستخدام طريقة الإضافة القياسية. وتم أيضاً تعين الكلوريد بالإضافة إلى العصر الكلي والقلوية الكلية بالتحليل الحمسي.

وقد اظهرت النتائج ان محتوى الفلوريد يقع في المدى من (0.01 الى 1.89 جزء من المليون) والكلوريد في المدى من (3.82 الى 777.24 جزء من المليون) والنترات من (8.52 الى 44.00 جزء من المليون). ولقد وجد أيضاً ان تركيز ايون الهاييروجين والعكارة وكمية الاملاح الداكنة والعصر والقلوية والموصلية الكهربائية مطابقة للمواصفات العالمية ما عدا كمية الاملاح الداكنة لقرية لعديد 2070 جزء من المليون الموصلية الكهربية لنفس القرية 3105 مايكرو سمنس. وقد اوضحت الدراسة أيضاً ان محتوى النترات والنترات مطابق للمواصفات العالمية لمياه الشرب. وقد اظهرت عينة واحدة فقط من قرية العديد قيم عالية بالنسبة للكلوريد (777.24 جزء من المليون) والكبريتات (881.00 جزء من المليون) والتي تجاوزت الحد المسموح به عالمياً (250 جزء من المليون).

وقد وجد ايضاً ان هناك خمس عينات في المحلية وهي فضلاً (1.66 جزء من المليون ) النكتة أبنتُر (1.63 جزء من المليون) الترابي القديمة (1.89 جزء من المليون) الكسمبر (1.51 جزء من المليون) بالإضافة إلى النكتة رفاعة (1.55 جزء من المليون) قد تجاوزت الحد المسموح به عالمياً (1.50 جزء من المليون).

ويمكن اعتبار ان المياه الجوفية لهذه المناطق غير صالحة للشرب.

وقد اوضحت النتائج ان المياه الجوفية لمنتصف و اقصى شرق المحلية هي الأكثر تأثراً بالفلوريد في حين ان تلك التي في شمال شرق المحلية هي الأكثر تأثراً بالملوحة.

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