Chemical Composition of Herbal Water Used for Medicinal Purposes in Bahrain

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ABSTRACT

The aim of this study was to provide preliminary data on the type and chemical composition of herbal water (water prepared from various herbs) used for treatment of diseases in Bahrain. A total of ninety six samples representing ten types of herbal water were collected from four factories in Bahrain and chemically analysed. The results revealed that there was a great variation in chemical composition of herbal water from one factory to other. Except for iron, waters studied had lower level of all chemicals (Ca, Mg, Cl, F, Na and Si) than tap water in Bahrain. Based on chemical regulations for drinking water, herbal water had better qualities than tap water.

The use of herbs for medicinal purposes started centuries ago. It was used by several civilizations such as Chinese and Egyptians. However, with the birth of the Islamic civilization folk medicine became more organized, and many famous scientists such as Al-Antaki, Ibn-Sina and Al-Razi were known to have practiced folk medicine.[1]

Recent studies in the Arabian Gulf countries have shown that herbal medicine is still being practiced.[1,2,3] In Bahrain, for example, it was found that the most common diseases treated by herbs were abdominal pain, diarrhoea, constipation, burns, headache, cold, joint pains, sore throat and toothaches. The use of herbs prescriptions by mothers ranged from 78.4% for abdominal pain to 35.6% for cold.[1]

Indicators showed that herbal water is used for treatment of several diseases in the Gulf. This can be observed from the gradual increase in production of such water. Bahrain is well known for producing herbal water, which is exported to most Arabian Gulf countries. The demand for this water is high, especially by inhabitants of east coast of Saudi Arabia, Qatar, U.A.E and Kuwait, in addition to Bahrain.

Information on chemical and pharmacological properties of herbal water is essential in order to evaluate the claimed benefits of this water in the treatment of certain diseases. There is no published date on the composition of herbal water used in the Arabian Gulf. This preliminary study, was performed to provide information on various types of herbal water used in Bahrain, their purposes of use and their chemical composition. Such information can be utilized as a baseline date for any further studies on folk medicine in Bahrain.

METHODS

The study was based on obtaining samples of herbal water produced in Bahrain. There are four factories that are permitted to produce such water in the country. Ten types of herbal water were included in the study, namely; legah, zumutah, markadoush, hendibaa, sukary, shaterah, ninaa, kozabon, hellwah and darseen. The total sample of water obtained was ninety six, and the size of sample for each kind of herbal water depended on the use, production and distribution of the water.

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Samples were obtained from all the four factories and sent directly to the Public Health Laboratory at the Ministry of Health, Bahrain, for chemical analysis. Chemical analysis of herbal water was compared with tap water. The analysis of Fe, Ca, Mg, Cl, F, Na and Si was determined according to the standard method used for the examination of water.[4] The acidity of water (pH) was determined using pH meter (Kent EIL,7020). Alkalinity was measured by titration method.[4]

RESULTS AND DISCUSSION

The main ingredients and purposes of use of herbal water studied are illustrated in Table 1. Some of these waters are prepared from several herbs such as markdoush, while others are prepared from one herb such as hellwah and darseen. The main ingredients of shaterah and kozabon waters are unknown. The factories consider the ingredients used in preparation of herbal water a secret, therefore, it was difficult to obtain a complete information about the main ingredients. Three of the herbal waters studied are used for treatment of abdominal pain, two for treatment of heart and liver diseases, and the others for treatment of fever, diabetes and allergy.

The local health authorities are much concerned about the herbal water used for treatment of both heart diseases and diabetes, as these diseases are highly prevalent in the country. However, until now there is no evidence that such waters cure these diseases.

Some of the herbal waters are used for flavouring purposes, in addition to their medicinal uses. The most common ones are legah, ninaa and darseen waters. Legah water is well known in all Arab Gulf states, and is widely used to enhance the flavour of tea and Arabic coffee.

The chemical composition of herbal water is presented in Table 2. There is a great variation in the concentration of chemicals in the same water from one factory to other. This can be attributed to the methods of extraction, as these methods are done in a traditional way, amount of herbs, time and

TABLE 1

Type of herbal water, their ingredients and purposes of use.

Type of water	Main ingredients	Purpose of use
Legah	Male flowers of date palm	Heart diseases, flavouring
Zumutah	Thyme and others	Liver diseases, abdominal pain
Markadoush	Marjoram, thyme and frankincense	Abdominal pain, get rid of gas
Hendibaa	Chicory leaves	Fever
Sukary	Murrh and others	Diabetes
Shaterah	Unknown	Allergy
Ninna	Mint leaves	Liver diseases, flavouring
Kozabon	Unkown	Heart diseases
Hellwah	Aniseed	Abdominal pain especially in infants and young children
Darseen	Cinammon sticks	Abdominal pain, flavouring

TABLE 2

Chemical composition of tap and herbal water, mg/1000g.

Water	No. of samples	X̄ ±SD	Acidity (PH)	Total Dissolved solid	Fe	Ca	Mg	Cl	F	Na	Si	Bicar-bonate	Total hard-ness
Tap water	9	X̄	7.9	1184.2	0.09	97.5	35.6	512.9	0.4	260.7	14.4	88.5	416.0
		±SD	0.17	673.4	0.1	65.7	24.1	322.1	0.17	179.0	12.2	43.0	266.3
Legah	19	X̄	5.6	30.0	0.1	1.5	2.6	2.8	0.16	1.4	4.4	19.2	14.3
		±SD	0.72	8.5	0.1	1.4	1.7	1.3	0.2	1.0	1.6	10.1	8.8
Zumutah	14	X̄	6.0	59.0	1.0	2.0	3.1	3.6	0.3	3.0	4.4	13.2	17.4
		±SD	0.85	63.0	1.5	1.6	1.6	2.2	0.2	2.2	3.7	8.2	8.5
Markadoush	14	X̄	5.7	77.6	0.3	4.1	2.5	13.4	0.2	5.8	5.3	13.6	20.6
		±SD	0.8	71.4	0.7	3.3	1.8	13.8	0.2	5.9	3.0	6.3	12.5
Hendibaa	12	X̄	6.4	22.4	0.1	1.4	2.8	3.0	0.2	1.9	4.6	18.5	14.8
		±SD	0.4	17.2	0.04	0.8	1.4	2.5	0.2	1.5	1.8	5.9	6.9
Sukary	10	X̄	6.2	54.0	0.1	2.2	2.1	8.7	0.2	5.0	4.1	15.1	14.0
		±SD	0.5	37.0	0.05	2.2	1.1	12.5	0.2	9.2	1.8	6.3	9.0
Shaterah	6	X̄	6.6	17.5	0.1	1.6	1.9	3.6	0.2	2.2	3.6	12.3	11.7
		±SD	0.5	11.7	0.01	0.7	0.8	2.7	0.2	1.6	0.6	2.7	4.3
Ninaa	6	X̄	5.5	61.3	0.07	1.9	4.1	6.1	0.4	2.2	3.7	13.8	13.4
		±SD	0.5	25.1	0.07	2.5	2.3	6.4	0.3	1.8	0.6	1.8	14.7
Kozabon	8	X̄	6.9	46.3	0.04	3.1	2.0	14.5	0.1	5.1	3.3	29.6	16.0
		±SD	0.3	32.8	0.03	2.9	1.2	22.1	0.2	5.8	0.6	6.6	10.6
Hellwah	8	X̄	5.7	58.4	0.1	1.0	2.0	3.7	0.1	7.0	3.2	23.6	10.4
		±SD	1.2	13.2	0.06	0.7	0.9	3.9	0.1	8.4	1.3	16.6	5.2
Darseen	2	X̄	7.1	51.0	0.1	0.4	2.9	2.3	0.1	1.5	2.9	13.0	13.0
		±SD	0.1	1.4	0.0	0.6	1.4	1.1	0.03	0.0	0.9	1.4	7.1

temperature of extraction which are not standardized. Therefore, quality control of herbal water is very important in order to produce standard products.

Iron content was highest in zumutah water (1.0%), compared to other waters (ranged from 0.04 to 0.3%). Sodium level is of a particular interest as it is considered a risk factor for hypertension. Sodium concentration in all herbal waters is very low, indicating that the factories could be using distilled water in preparing such waters. The lowest sodium level was seen in legah water (1.4%), while the highest level was observed in hellwah water (7.0%).

Data on acidity suggested that ninaa, legah, markadoush and hellwah had the highest level of acidity with a pH that ranged from 5.5 to 5.7.

When compared with tap water in Bahrain, herbal waters studied were only higher in iron content, which may have resulted from extraction of herbs used in their preparation. On the other hand, tap water had higher levels or all other chemicals. This may lead to the conclusion that herbal waters commonly used in Bahrain are better than tap water based on chemical characteristics recommended for drinking water.[4]

CONCLUSION

Our study showed that herbal waters were better than tap water based on the chemicals determined. However, it is hard to say that herbal waters are beneficial for treating the claimed diseases. Investigations are needed to evaluate the claimed curative properties of herbal waters, with emphasis on pharmacological characteristics of these waters. We hope that this preliminary study will open the door for other investigators to carry out indepth studies in this interesting field of folk medicine.

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