

## Physio-Chemical Differences Between Aab-E-ZamZam and Mineral Water Effect of Water Intake on Blood Pressure

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**Abstract:** The physio-chemical quality study of Aab-e-ZamZam and Mineral water (Aqua Fina) sources Used in Mansehra has been studied to evaluate their suitability for potable purposes. Drinking Water and Aab-e-ZamZam samples were collected randomly from around the study area. The Physical parameters determined in this study were conductivity, pH, taste, odour colour and Chemical parameters include sodium, potassium, manganese, magnesium, nickel, arsenic, Calcium, iron, Aluminium, cadmium. Aab-e-ZamZam contains increased proportion of Calcium, magnesium and sodium. All these elements are important constituent of our body and control different biochemical processes. High Concentration of calcium reduces the risk of premature birth and low birth rate it is good for bones health, calcium is very important for Neuromuscular Excitability. Magnesium is very important mineral inside human body, there Are more than 300 enzymes inside human body which require magnesium as cofactor and This element have very important role in normal myocardial physiology mineral water also Have low level of magnesium and calcium as compare to Aab-e-ZamZam other than this due To plastic leaching it is not good for human body. Aab-e-ZamZam is ideal water for drinking as it contain ideal concentration of different minerals. Minerals present in water absorb more efficiently as compare to diet or supplement so drinking healthy water provide us healthy life And it reduces risk of diseases.

**Key words:** Physico-Chemical Quality • Drinking Water Quality • Mansehra

### INTRODUCTION

Safe and good quality water is the basis for good human health water Provide us essential Elements human body is made up of 70% of water but when same water is polluted it Become dangerous for human health [1]. The name ZamZam originate from phrase ZomeZome means 'stop Flowing' this ZamZam water also called as Aab-e-ZamZam is special to Muslims in Significance and History began thousands of years ago when Ibrahim (AS) infant son Ismail (AS) was thirsty He was crying for water and was kicking at ground when water rushed out it is self Replenishing it is constantly replenishing itself and produce gallon upon gallon of Water [1].

The Ministry of Agriculture and Water Resources sent samples of Aab-e-ZamZam for Investigations to the European laboratories in 1971, in order to check portability of the water. The results of the samples of Aab-e-ZamZam tested by the European laboratories showed that ZamZam water has a special physique that makes it advantageous water. The ZamZam water Contain high quantity of calcium and magnesium salts, more significantly, the water contains Fluorides due to which it has an effective germicidal action. Fluoride present in Aab-e-ZamZam can be helpful in reducing the incidence of dental Caries [2].

European laboratories result showed that the water was fit for drinking [3]. A group of Pakistani researchers also analyzed the ZamZam water and found identical

Results to that previously mentioned by European Laboratories. In Om Al Qura university Institute of custodian for Al Hajj research also conducted a special research and examined the Extent of purity of ZamZam water and found that it has a wonderful physique that makes it Different from other drinkable liquids because it is naturally pure and sterile that has no Germs [4].

The preponderance of evidence indicates that fluoride Can Reduce the incidence of dental caries and that fluoridation of drinking water can provide such protection [6]. Most important thing about Aab-e-ZamZam is that it has always maintained the same composition and same taste ever since it came into existence. Mostly in wells due to algal growth and vegetation taste and odour problems can occur. Although ZamZam Well is millions of years old but there is no sign of such growth [5]. The main source of ZamZam water is 100% pure but the some sign of pollution exist due to underground leakage, in order to solve this problem ultraviolet ray is used for sterilization [3].

It is scientifically proven that ZamZam water has healing qualities because it contain higher Concentration of calcium and magnesium other then this fluoride due to which it has Germicidal action. The kingdom of Saudi Arabia is the biggest producer of fresh water by Desalination with an Installed capacity of more than 100 million USGPD accounting for 24.4% of the world Desalinated water production [7].

Bottled water consumption is widely and rapidly increasing because it has better taste it is easily available and it is Symbol of status. Poor Quality control during production or Distribution can contaminate this Water [8]. In mineral water macro and micro elements is high so mineral water is considered as good Source of these elements in children's diet [9]. Aim of present research was to analyze chemical composition of Aab-e-ZamZam, its comparison with mineral water in order to check availability of macro and micro nutrient in ZamZam and mineral water Study effect of Aab-e-ZamZam on human health and to study the effect of Aab-e-ZamZam on blood pressure of human being.

## **MATERIALS AND METHODS**

Laboratory investigation was done in order to determine chemical properties of Aab-e-ZamZam and then its comparison were done with mineral water.

**Sample Collection:** Aab-e-ZamZam was collected from Al Haram pipes prior to collection of water bottles were washed with distilled water 300ml water sample was collected in 500ml polythene bottles. For mineral water analysis aqua fina an international brand was used.

**Area of Study:** The analyses were carried out at the COMSATS University Abbottabad Campus and Ayub Medical collage Abbottabad.

**Method Used for Analysis:** The analysis was for Conductivity, pH, Taste, Odour, Colour and chemical parameters Include Sodium, Potassium, Manganese, Copper, Mercury, Magnesium, Nickel, Arsenic, Calcium, Iron, Aluminium and Cadmium.

**pH Measurement:** Analysis of pH was done by pH meter Genway (made in UK). For Sodium, Potassium, Manganese, Copper, Mercury, Magnesium, Nickel, Arsenic, Calcium, Iron, Aluminium, cadmium analysis Flame Photometer was used and run for 15 minutes for stable conditions. A series of Calibration standards were prepared to calibrate Flame Photometer. The lowest standard was used prior to the higher standard. The readings were recorded and calibration curve was Draw. The water samples were run and the concentration was calculated.

**Blood Pressure Measurement:** Twenty different patients of hypertension was selected 10 patients for 1 month only drink Aab-e-ZamZam water and 10 use mineral water after one month their blood pressure was checked for three days and average blood pressure was taken.

## **RESULTS AND DISCUSSION**

Our body by weight is made up of 50 to 60% of water and water play crucial role in our body and help in regulation of almost all biological processes plays an active role in all it allows digestion, food elaboration and waste elimination. Good quality water is very much important for the healthy life of human being. As above results indicates that Aab-e-ZamZam contains increased proportion of calcium, magnesium and sodium. All these elements are important constituent of our body and control different biochemical processes.

Table 1: Showing Physical Parameters of Mineral Water and Aab-e-ZamZam

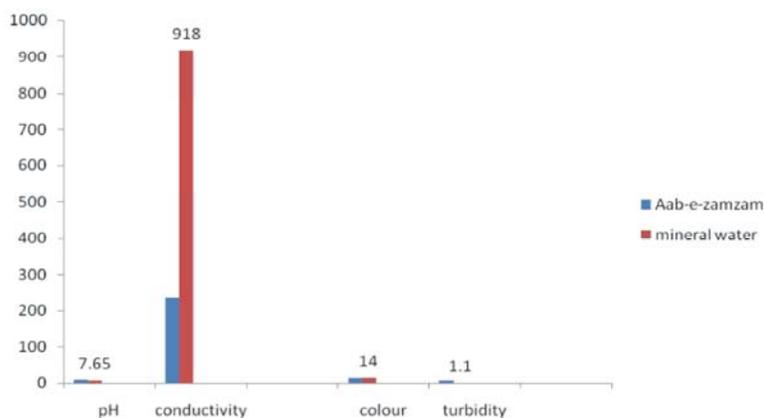
S.No	Parameters	Highest Desirable Level	Mineral Water	ZamZam
1	pH	6.5-8.5 (WHO)	7.65	7.8
2	Conductivity(Micro S/cm)	NGVS	235	918
3	Color	15 (WHO)	<15	<15
4	Taste	Unobjectionable	Unobjectionable	UO
5	Odor	Odorless	Odorless	Odorless
6	Turbidity	5 (WHO)	1.1	7.5

Table 2: Showing Chemical Parameters of Mineral Water and Aab-e-ZamZam

S.No	Parameters	Highest Desirable Level	Mineral Water	ZamZam
1	Sodium (mg/l)	200 (WHO)	35	98.78
2	Calcium (mg/l)	75 (KSA)	2.32	54.6
3	Potassium (mg/l)	12(EC)	1.358	8.337
4	Magnesium (mg/l)	150 (WHO)	13.53	20.06

Table 3: Showing Heavy metals concentration

S. No	Parameters	Highest Desirable Level	Mineral Water	Aab-e- ZamZam
1	Iron (mg/l)	200 (WHO)	0.061	0.048
2	chromium (mg/l)	0.05(WHO)	0.04	-0.101
3	Aluminum (mg/l)	0.2(WHO)	0.238	0.049
4	Nickel (mg/l)	1.50 (WHO)	0.048	0.055
5	Arsenic (mg/l)	0.01(WHO)	-3.875	-4.0663
6	cadmium (mg/l)	0.003(WHO)	0.005	0.005



Graph 1:

Magnesium is very important mineral inside human body, there are more than 300 enzymes inside human body which require magnesium as cofactor and this element have very important role in normal myocardial physiology [10, 11].

Experimental studies showed that magnesium present in water is better than magnesium present in water is absorbed 30% better as compare to magnesium present in diet. Deficiency of magnesium in water it cause hyper lipidemia, atherogenic deposition of arteries and result in atherosclerosis [12].

Calcium is also present in higher concentration in Aab-e-ZamZam. Calcium is very Important part of bones and teeth other than this calcium is very important for

Neuromuscular Excitability according to a French case study region in which there was high Level of calcium in drinking water that is greater than 75mg was favourable as compare to Drinking water contain less than 75mg/L [13]. According to report children who drink water having higher calcium level shows Low incidence of fracture as compare to other children's [14]. There is Inverse Correlation between calcium intake and blood pressure drinking water with high Concentration of calcium reduces the risk of premature birth and low birth rate [15].

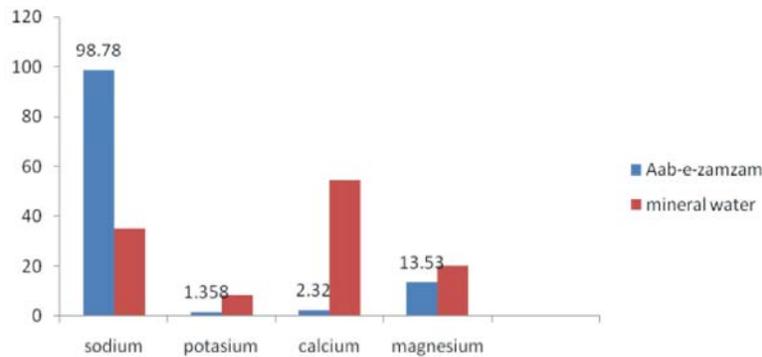
Water having low concentration of calcium and magnesium may result in myotonic Lateral sclerosis [16]. Higher level of calcium and magnesium in water Protect Human teethes against caries and periodontal diseases

Table 4: Effect of Aab-e-ZamZam on blood pressure [12]

Patient name	Blood pressure	Average Blood pressure after 30 days
GulzarBibi	150/90	130/80
Muhammad mushtaq	150/100	140/90
Salma bibi	140/80	120/80
Haleemabibi	140/100	130/95
Zaib-un-nisa	160/100	130/80
Abdul Qayyum	150/90	130/80
ShameemBibi	170/100	140/90
Azrakhatoun	130/90	120/85
Nor khan	150/90	130/80
Farkhanda	160/100	130/80

Table 5: Effect of mineral water on blood pressure [11]

Patient name	Blood pressure at normal routine	Average Blood pressure after 30 days
Aniqasaher	170/100	150/100
Gudo	150/90	150/90
Muhammad Munir	160/90	155/95
Muhammad aqeel	140/80	140/80
Farzana	150/100	140/100
Anilabibi	160/80	150/80
Imran	130/90	140/90
MehwishBibi	140/90	150/90
ShakeelaBibi	160/90	160/80
Muhammad Saleem	150/100	150/90



Graph 2:

Water having High level of calcium and magnesium protect human body against CVD and cancer of Oesophagus Pancreas breast and rectum[17] Drinking Aab-e-ZamZam can produces same effect on human body as it has desired concentration of calcium and Magnesium. Although, we all are agreed that sodium is essential for normal human life, there Is daily requirement about sodium intake, however, total daily consumption of 120–400 mg Will meet the daily requirements of sodium for growing infants and young children and for Adults 500mg. No health-based guideline value is therefore available. However, sodium May alter the taste of drinking-water at levels above about 200 mg/litter; while

in ZamZam Water sodium concentration is satisfactory. All other elements are also present within allow Range of WHO.

Twenty patients of hypertension was selected keeping all conditions constant like their diet for 10 patients instead of simple tap water Aab-e-ZamZam was provided for 30 days while other 10 patients was drinking mineral water there was significant decrease in blood pressure for those 10 patients which use Aab-e-ZamZam as Aab-e-ZamZam is slightly alkaline in nature so we was surprised to see this result but this effect of Aab-e-ZamZam was may be due to presence of high concentration of calcium. Tables 3.4 and 3.5.

## CONCLUSION

Drinking healthy water results in healthy life. Aab-e-ZamZam in purification and chemical composition is better than mineral water. Aab-e-ZamZam has ideal ratio of calcium and magnesium prevent human body from Heart attack, dental carries and good for health of bones and teeth due to fluoride Contents. Aab-e-ZamZam contains high concentration of calcium that reduces the risk of low Birth rate and it lowers the blood pressure.

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