







Jurnal Ilmu Sosial Mamangan Volume 12, Issue 03, Special Issue 2023

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Author (s) : Nurul Hikmah Kartini

Source : Jurnal Ilmu Sosial Mamangan, Volume 12, Issue 03, Special Issue 2023
Publisher : Sociology Education Department of Universitas PGRI Sumatera Barat

Doi : http://dx.doi.org/10.22202/mamangan.v12i03.7944

To Cite This Article:

Nurul Hikmah Kartini, 2023. *Natural Stone Water Filter Tajau: Local Wisdom Of The Banjar Tribe In Hulu Sungai, South Kalimantan, West Sumatra*. Jurnal Ilmu Sosial Mamangan, Volume 12, Issue 03, Special Issue 2023: 675-681.

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Jurnal Ilmu Sosial Mamangan

Volume 12, Issue 03, Special Issue 2023, p. 675-681 ISSN: 2301-8496 (*Print*), ISSN: 2503-1570 (*Online*)

https://ejournal.upgrisba.ac.id/index.php/jurnal-mamangan/index



Natural Stone Water Filter Tajau: Local Wisdom Of The Banjar Tribe In Hulu Sungai, South Kalimantan

Nurul Hikmah Kartini

Department of Primary Teacher Education, Faculty of Teacher Training and Education, Universitas Muhammadiyah Palangkaraya, Palangka Raya, Indonesia Email: nurulkartini77@gmail.com

Abstract

This study aims to obtain information about the local wisdom of the Banjar Tribe for daily water consumption. This study uses qualitative methods. The findings of this study indicate that only a few local communities in the Banjar tribe in the Upper Kalimantan River use Tajau filtered water for daily consumption. On the other hand, people actually still believe that consuming filtered water with Tajau stones without boiling first does not cause disease. These results are proven by the results of testing the chemical-physical parameters of the water from the stone filter Tajau which shows that the water is suitable for consumption. The local wisdom of the Banjar people in Hulu Sungai South Kalimantan in using filtered water Tajau for consumption is proven to meet the drinking water quality requirements. Thus, the local wisdom of using the stone Tajau holds an interesting potential for further research to find out the effect of the types of rock used so that it can guarantee the quality of filtered water.

Keywords: Natural stone water filters, local wisdom, Banjar tribe

INTRODUCTION

Indonesia is a country which has the richest water. The availability of water reaches 15,000 m3 per capita annually. However, this is not an insurance for community to get an easy access to clean water. Water is a very important element in life of living beings [1].

The island of Borneo is one of the largest islands both in Indonesia and in the World. Water conditions on the island of Borneo dominated by the river. Rivers that dominate the geographical conditions on the island of Borneo, especially in the province of South Kalimantan, local wisdom holds a lot in it [2]. The Banjar people who live along the Nagara River which stretches from upstream to downstream have unique local wisdom in consuming water for their daily needs [3]. The turbid river water conditions certainly cannot be directly consumed by people living on the banks of the river [4]. Uniquely, the surrounding community has always had a unique way of inheriting local wisdom to make it suitable for consumption without having to be boiled first [5].

Local wisdom is a view of life and is a well-known life strategy activity carried out by well-known local residents in responding to their various needs. Another opinion states that the local wisdom is defined as a view of life and knowledge as an intangible of life [6]. Develop daily habits in everyday life through direct teachings from parents to their children or grandchildren from their ancestors. As long as this traditional wisdom is lived, practiced, taught and passed down

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History:

Received : 01 September 2023 Revised : 13 October 2023 Acepted : 28 November 2023 Published : 30 December 2023 from one generation to another and forms the pattern of everyday human behavior, both to fellow humans and nature and the supernatural [7].

One of the local wisdom occurs consecutively about pure river water through water filter media made of stone called Tajau [8]. However, stone water filters are increasingly being abandoned by people who live in many ways, many modern tools or other alternatives in clear water such as drilling wells to get ground water, the provision of filtration drinking water, and programs that use medicinal water purification [9]. This research has never been done before, so information about using Tajau is quite small, only verbally through interviews with the community [10].

Based on the formulation of the problem, the studies aim to gain data or information about the community in preserving local wisdom Tajau as a rock filter the water used daily. Surface water quality has a vital role in determining the ecological environment, public health, and social and economic development [11].

METHOD

The research method used was qualitative research i.e. research on data collected and expressed in the form of words and pictures [12]. The words are arranged in sentences for example, sentence interviews between investigators and informants. The qualitative research was in contrary with the philosophy of Constructivism on assume that this prolific plural, interactive and an exchange of experiences of social interpreted by individuals [13].

This research was conducted in Hambuku and Teluk Sinar Villages in Hulu Sungai Pandan, Hulu Sungai Utara Regency, South Kalimantan. Informants in this study are the people in hambuku village community center and the Gulf that still uses sibar Tajau as a filter for water consumption daily. The technique used is interview and documentation. Data were analyzed by stages of data reduction, data presentation, and formulation of conclusions [14].

All six drinking water samples were collected from Natural stone water filters from Hulu Sungai, South Kalimantan [15]. The physical and chemical parameters of drinking water quality were examined in this study at Balai Laboratorium Kesehatan Provinsi Kalimantan Tengah, Palangka Raya, Indonesia. Physical parameters involved odor and color, while chemical parameters covered the level of iron (Fe), fluoride (F), hardness (CaCO3), nitrite (NO2-N), and pH [16].

The physical parameters were examined by organoleptic method. The level of iron was measured by Atomic Absorption Spectroscopy (AAS) based on The Indonesian Standardization or Badan Standar Nasional Indonesia, SNI 6989.4:2009. The level of fluoride was determined based on American Public Health Association, APHA 4500 F-D-2005 [17]. The water hardness determination was conducted by complexometric titration based on SNI 06-6989.12-2004. The level of nitrite determination was carried out by using UV-Vis Spectrophotometer based on SNI 06-6989.9-2004. The determination of the pH value of water using a pH meter based on SNI 06-6989.11-2004. All result of parameters determination was compared to quality standard of drinking water [18]. The quality standard of drinking water was used in this study according to Regulation of Minister of Health of the Republic of Indonesia No. 32 of 2017 [19].

RESULT AND DISCUSSION

Based on the findings in the field, we obtained the following results: Three informants in the village of Hambuku Tengah noted that:

- 1. The use of *Tajau* from the datu is inherited from their father. The origin of *Tajau* is unknown [20].
- 2. River water was stored one night and then put into *Tajau*, Three of the two informants said they immediately drank water dripping out of the kitchen, which was stored in a jar. There are only people who use different methods, by boiling water first.
- 3. For decades, they have been told that they have never experienced a disease related to water consumption.
- 4. To keep it clean, use a special brush from coir, usually brushed every 1-2 months.

Three informants in Teluk Sinar village knew that:

- 1. The use of *Tajau* from their ancestors. The origin of *Tajau* is unknown.
- 2. River water was deposited one night and then put into *Tajau*, three informants said that they consumed direct drinking water which was dripped out of the kitchen and used in jars.
- 3. For decades, they have been told that they have never experienced a disease related to water consumption.
- 4. Water is usually drunk after returning from the fields, or farming. They also use water to eat, cook, and so on.
- 5. To keep it clean, use a special brush from coir, usually brushed every 1-2 months.

The physical form of the *Tajau* arrangement in Hambuku Tengah Village is shown in Figure 1, showing a multilevel arrangement between *Tajau* and a storage vessel [21]. To clean the *Tajau*, they use a brush made from Coconut Skin Fiber which has been stored for a long time, as shown in Figure 2. It is interesting to see how traditional societies use organic material stored for a long time to clean material made of natural stone [22].



Figure 1. A multi-storey arrangement between *Tajau* (upper) and a storage vessel (lower).



Figure 2. Brush from coconut skin fiber to clean Tajau

The quality of drinking water from the filtered sample was determined in this study. The main physical and chemical parameters of drinking water samples include odor, taste, iron (Fe), fluoride (F), hardness (CaCO₃), nitrite (NO₂-N), and pH given in Table 1.

Parameters	Unit	Quality	Sample					
		standards	1	2	3	4	5	6
			Physic	cal Parameter	rs			
Odor	-	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless	Odorless
Flavor	-	Flavorless	Flavorless	Flavorless	Flavorless	Flavorless	Flavorless	Flavorless
			Chemi	cal Paramete	rs			
Iron (Fe)	mg/L	1.0	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399	< 0.0399
Fluoride (F)	mg/L	1.5	ND*	ND*	0.0936	ND*	ND*	0.0682
Hardness (CaCO ₃)	mg/L	500	86.8	88.8	40.9	88.8	91.8	86.8
Nitrite (NO ₂ -N)	mg/L	1	0.018	0.005	1.43	0.25	< 0.0015	0.0035
рН	-	6.5-8.5	7.32	7.73	8.42	7.86	7.88	7.96

Table 1. The quality of drinking water samples filtered by Tajau

The drinking water quality based on the physical parameters shows that all samples were odorless and flavorless. It means that all drinking water filtered by Tajau meet the requirement of drinking water quality based on physical parameter [23]. Not surprisingly, indeed, natural inorganic materials such as natural rocks are rarely known to cause changes in physical properties in water that only experience contact in a short time [24].

The level of fluoride and nitrite are mandatory chemical parameters for drinking water. The level of fluoride and nitrite threshold value are 1.5 mg/L and 1 mg/L, respectively [25]. All samples did not exceed the threshold value of fluoride [26]. Four of six samples show that the level of fluoride was not detected [27]. Only one sample exceed the threshold value of nitrite, 1.43 mg/L [28].

None of the drinking water samples analyzed for level of iron, water hardness and pH exceeded the limit permitted by Indonesian government. All samples have minimum level of iron, less than 0.0399 mg/L [29]. The value was well below the threshold value for iron level [30]. The ranges for water hardness in all samples were 40.9 to 91.8 mg/L. It shows that all samples have low water hardness. All the pH values were in the range of 6.5 to 8.5.

CONCLUSION

The view of local wisdom about community knowledge as a water filter is people's understanding that there are fewer people using it. However, a small portion of the Banjar tribe community maintains the use of Tajau by routinely cleaning it using special handmade coconut fibers. The results of physical and chemical quality tests for water quality indicate that the filtered water with Tajau is suitable for consumption.

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