

## Recycling Ablution Water (*Wudu'*) Using Membrane Water Treatment: A Study from *Fiqh* Halal Perspective

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**Abstract:** Water conservation is essential in Islam. The reuse of water for ablution through the process of water treatment is one way of water conservation. However, discussions and debates occurred because the source of water used for the treatment is categorized as *musta'mal*, which is pure but not purified and may contain *mutanajjis* water. This article proposes a model of treatment and purification of ablution water in mosques or surau using membrane water treatment for water reuse. This article uses a qualitative method focusing on document analysis regarding *fiqh* books, articles and guidelines related to water treatment technology. According to the *fiqh* and science, this study found that water treatment for treating used ablution water using membrane water filter is pure and clean.

**Keywords:** Ablution; Membrane Water; *Fiqh*; Halal.

### Introduction

Water is a gift from God to humans and an essential component of human life (Salleh et al., 2021). The Quran and hadith contain several references to the necessity of water management and conservation. According to Quranic evidence, water is mentioned 63 times in the Quran (Abd al-Baqi, 1987), accounting for about 1% of all Quranic verses (Zaharuddin, 2004). Meanwhile, the hadith of the Prophet Muhammad PBUH (Peace Be Upon Him), if referred to in the book of *Sahih* al-Bukhari, starts from hadith no. 541 until hadith no. 569, discusses the water management and amounts to almost 28 hadith and are all categorized as authentic (*sahih*) hadith (Zaharuddin, 2004). As a result, it is proven that Islam places a great value on water management. Indeed, water management has been a feature since 1420 years ago and continues until today, as well as related law that has been enforced from ancient times to present. The evidence can be found in a clause of the Ottoman Turkish era's first Islamic Civil Law Code, namely *Majallah al-Ahkam al'Adliyyah*, which covers topics of water rights as well as ownership and distribution of water reserves (Istajib & Raihanah, 2012). This evidence proves that water is a crucial element that need to be appropriately managed and inherited by the next generation.

Islam requires its followers to utilize water wisely and sparingly, and it is also vital to prevent excessive use in issues of worship. Muslims must conserve water even when performing religious obligations like conducting ablution and purifying minor and major impurities. Prophet Muhammad PBUH demonstrated the action by using water during ablution, as narrated in the hadith with translation; The Prophet would perform ablution with one *mudd* and would perform a ritual bath with one *sa'* up to five *mudd* (*Sahih* al-Bukhari). Furthermore, the Parakrama Bahu the Great, King of Sri Lanka in the 12<sup>th</sup> century, achieved a superior degree of water management by adhering to his philosophy (De Casparis, 1975): 'Don't let even a drop of rainwater flow into the sea without helping human beings.' This idea states that humans can make the most use of available water without wasting it.

Furthermore, water is an element present on Earth named the hydrosphere which is one of the planet's natural ecosystems. The hydrosphere is one of the essential environmental components of the earth's natural ecosystem besides of atmosphere, lithosphere, and biosphere (Meerangani, 2018). These four components of the ecosystem must always be in a condition of equilibrium by maintaining and managing them properly. Water elements exist on the earth's surface, in the air, and in the soil; approximately 97 percent of the earth's water resources consist of seawater which cannot be utilized for household purposes, and only 3% of water resources, including ice, groundwater, river water and well water may be used for domestic purposes such as for agriculture, industry, commerce and the general public (Yosfadri & Hashim, 2019). Thus, the importance of water resources can be seen and need to be properly managed for human sustainability, especially in maintaining water quality. Hence, water treatment by recycling and reuse of used water is one of the activities in managing and conserving water resources, and this technology is a need nowadays (Reddy et al., 2017). While for religious purposes, water is used for over 80% of total water consumption in a mosque during ablution (Muneer et al., 2014). According to certain studies, around 86,500 litres of water are needed for ablution per month, or about 5 litres (Suratkon & Che, 2014) to 6 litres of water is necessary for an individual for ablution during one prayer period. Therefore, Muslims should try to emulate the Prophet Muhammad's action in terms of ablution which required one *mudd* of water only.

Thus, recycling the ablution water can be done because the water does not contain harmful chemicals and may only contain suspended solids, BOD5, pH turbidity, and minor contaminants such as fecal coliform and minor chemical contaminants such as nutrients and sodium as a result of the use of chemical products like soap. The reuse of ablution water is seen as the best effort in managing water resources (Muneer et al., 2014), as the water demand is expected to rise in tandem with economic growth until 2050, particularly from the domestic and industrial sectors.

## Literature Review

Halal concerns may arise when discussing water treatment technology due to the use of filter material and the status of water sources, which is from *musta'mal* or *mutanajjis* water. Thus, this issue can be discussed on the *sharia* law about the halal status and consumers rights. Numerous agencies related to halal matters in Malaysia such as the Department of Islamic Development Malaysia (JAKIM), Halal Development Corporation Berhad (HDC), States Department of Religious Affairs (JAIN), Department of Standards Malaysia, Department of Chemistry Malaysia and any agencies that have demonstrated Malaysia's relevance as a halal hub that can be referred internationally.

According to (Samori et al., 2014), Islam has established general halal rules, including the requirement that all ingredients and materials must be halal. Second, all permissible animals for consumption in Islam must be slaughtered according to Islamic rituals and slaughtering ethics by a sane Muslim with a sharp cutting tool. Finally, during storage, transportation, preparation, or serving, halal ingredients may not be mixed with haram materials such as pork, swine, or dog (Nawai et al., 2007). All three requirements must be followed to ensure the halal and haram status of Muslim consumer products.

JAKIM introduced Manual Procedure for Malaysian Halal Certification (Domestic) 2020 (MPPHM 2020), Malaysian Halal Management System (MHMS) 2020 and Malaysian Standards (MS) 2019 to strengthen coordination between the halal certification and halal products (Mohd Mahyeddin, 2016). These three references are the most commonly encountered for the consumer goods related to certification of consumer products, that shall comply with following guidelines:

1. MS 2200-2:2013 –Islamic Consumer Goods Part 2: Usage of animal bone, skin and hair –General guidelines
2. Decisions of the Discussion Committee of the National Council for Islamic Religious Affairs of Malaysia (*Jawatankuasa Muzakarah Majlis Kebangsaan Bagi Hal Ehwal Ugama Islam Malaysia*) decreed by the states
3. Other related guidelines and regulations

This means, these standards and guidelines should be referred to as a whole, as they support and complement one another.

Regarding to the above guidelines from JAKIM, halal standards have been introduced to ensure the production of halal products are complying with the *sharia* requirement in Malaysia and also to confirm the quality of products can be trusted by users (Mohd Mahyeddin, 2016). Malaysia Halal Certification scheme as stated in Malaysian Halal Management System (MHMS) 2020 divided into following parts:

1. Food and Drink Products
2. Food Premises
3. Consumable Materials/ Products
4. Cosmetics Products
5. Slaughterhouse
6. Pharmaceutical Products
7. Logistics Services
8. Medical Devices Products
9. OEM (Original Equipment Manufacturer)

Consequently, regarding to the water treatment process, the manufactured water filter is categorized and monitored under the scheme of consumable materials or products as the membrane water filter is used to filter water that will be consumed by consumers.

In addition, there are also several important standards that serve as guidelines for managing halal matters. The standards are as follows (Standards Malaysia, 2009):

**Table 1:** Halal Standards in Malaysia

No.	Code	Standards Title
1.	MS 1500:2019	Halal Food- General Requirements (Third Revision)
2.	MS 2424:2012	Halal Pharmaceuticals- General Guidelines
3.	MS 2634:2019	Halal Cosmetics- General Requirements (First Revision)
4.	MS 2200-2:2012	Islamic Consumers Goods- Part 2: Usage of Animal Bone, Skin and Hair - General Guidelines
5.	MS 2400-1:2019	Halal Supply Chain Management System - Part 1: Transportation- General Requirements (First Revision)
6.	MS 2400-2:2019	Halal Supply Chain Management System - Part 2: Warehousing- General Requirements (First Revision)
7.	MS 2400-3:2019	Halal Supply Chain Management System - Part 3: Retailing- General Requirements (First Revision)
8.	MS 1900:2005	Quality Management Systems- Requirements from Islamic Perspectives
9.	MS 1900:2014	Shariah-Based Quality Management Systems- Requirements with Guidance (First Revision)
10.	MS 2300:2009	Value-Based Management Systems- Requirements from An Islamic Perspectives
11.	MS 2393:2013	Islamic and Halal Principles- Definitions and Interpretations on Terminology
12.	MS 2565:2014	Halal Packaging - General Guidelines
13.	MS 2594:2015	Halal Chemicals for Use in Potable Water Treatment - General Guidelines
14.	MS 2610:2015	Muslim Friendly Hospitality Services -Requirements
15.	MS 2627:2017	Detection of Porcine DNA - Test Method- Food and Food Products

Source: (Standards Malaysia, 2009)

The related standard (MS) respecting this membrane water treatment's research referred to the MS 2594:2015 Halal Chemical for Use in Potable Water Treatment- General Guideline. This Malaysian Standard (MS) specifies requirements for halal chemicals used in the treatment of potable water. Meanwhile, MS 2200-2:2012 which is discussed the Islamic Consumers Goods- Part 2: Usage of Animal Bone, Skin and Hair – General Guidelines also related to this research. Both standards specify requirements for halal material particularly for the filter's material sources and the chemicals used in potable water treatment. The processed chemicals used in treating the raw water during the production of potable water are in accordance with *sharia* law and the relevant regulations or law in force in Malaysia (Imran & Abid, 2016).

## Method

This research is a normative legal research. The research approach is based on applicable laws and regulations (Saputra & Emovwodo, 2022). The data of this study were obtained from the results of analyzing the provisions of laws and regulations, journals, and relevant articles (Hartini, 2022). Primary legal material is an authoritative legal material that has the authority so that it has binding legal force, including Law Number 11 of 2020 concerning Job Creation. (Dian & Jenvitchuwong, 2021)

This research is carried out by performing a theme analysis using the method of analysis document. By referring to the *fiqh* books and documents relating to the research issue, document analysis is performed to obtain data pertaining to *fuqaha's* viewpoints regarding water treatment and purification processes. The information gathered from the papers will be examined, analyzed, and summarized to address the research questions and objectives. Thematic analysis gathers data by reviewing documents linked to the concerns and defining the theme.

The pre-data collection phase and the post-data collection phase are the two phases of data collection:

### Pre-Data Collection

The Hanafi, Maliki, Shafi'i, and Hanbali schools of thought are chosen by referring to their books. The data from several agencies including the Department of Islamic Development Malaysia (JAKIM), Department of Environment (DOE), World Health Organization (WHO), and other associated authorities, as well as a recent fatwa on the use of treated water for religious purposes are also identified. Several articles from a comparable journal have also been read and analyzed for theme analytic purposes.

### Post-Data Collection

Thematic analysis is then carried out in this phase by following a set of stages to generate connected themes relevant to the study's issues. The procedures are as follows: extraction of data for thematic analysis, identifying the starting codes, choosing a theme and sub-themes, themes and sub-themes must be validated, and themes for reporting

The theme analysis approach is used to analyze the data in this study. The selected documents are analyzed to develop the themes. There are various stages involved in putting these measures into action, which are as follows:

- a) Data breakdown, verification, comparison, and categorization. This process generates a notion, which is subsequently collected and categorized, as well as data, which is then processed for the following phase.
- b) Making links between categories is used to regroup data that has been received in a new form and manner following the first phase. This is accomplished by linking from one category to the next. The core category affirms each category's importance and includes areas that require more inquiry.

When the transcribed text is created, the data is analyzed to produce categories and subthemes, which are then ordered to form the primary themes. This is referred to as the coding process. This categorization is done for each of the related content texts from the documents. Following then, a constant comparison process is used, in which the data is compared, and the text is searched for clues. Accordingly, this is the way the data for this study were analyzed.

## Results and Discussion

### The Status (*sharia* law) of Water Sourced for Ablution Reuse Using Membrane Water Treatment

The water source used for the treatment are consist of *musta'mal* (used water) and *mutanajjis* water (contaminated water with impurities). Islam requires purification by using *mutlaq* (pure) water especially for religious purposes such as ablution, *ghusl* (purify from impurities) and others. Therefore, the status of *sharia* law and fatwa regarding the utilization of treated water must be referred in this research. Based on the findings, all the related fatwa from inside and outside of the country such as fatwa from Discussion of the Fatwa Committee of the National Council, fatwa of Dar al-Ifta' Saudi Arabia, fatwa of the Islamic Religious Council of Singapore and fatwa of the Indonesian Ulama' Council, that it is permissible to use treated water with several guided conditions to consider the treated water from *mutanajjis* water as *mutlaq* water.

**Table 2: The Fatwa of Using Treated Water**

Fatwa/ Sources	Details	Sharia law/ Status
Discussion of the Fatwa Committee of the National Council for Islamic Religious Affairs of Malaysia 53 <sup>rd</sup> at a conference on 27 November 2002 (JAKIM, 2015)	Based on the decision on consumption new water (NEWater), the fatwa committee has decided that NEWater is clean and usable.	permissible
Fatwa of Dar al-Ifta' Saudi Arabia (Ahmad Zaharuddin, 2004)	Treated water has gone through the recycling process and is free from odor, taste and color. Therefore, it is considered as <i>mutlaq</i> water.  The argument is that a significant amount of water that is contaminated with impurities becomes pure when the water changes naturally, when clean water is added to it, or when the water changes naturally as a result of exposure to sunlight, wind, etc.  This indicates that the water is considered pure after treatment. This water can be used to purify impurities, cleansedirts and legitimately purifies with it.  However, if there is other water that can used, that water takes priority.	permissible with condition
Fatwa of the Islamic Religious Council of Singapore Fatwa Committee of the Islamic Religious Council of Singapore in a fatwa dated 22 May 2001 (Majlis Agama Singapura, 2014)	Water which has been treated by distillation is considered <i>mutlaq</i> water.  This is based on some views: 1. Shaykh Abdul Rahman Abdul Khalik stated that molecules of water are forever clean. This means that the contaminated water will not dissolve with the impurities, but the water will turn into <i>mutanajjis</i> water because it carries impurities only and is not mixed with it. When contaminated water is treated, it becomes pure and self-purifies.	permissible

	<p>2. Imam an-Nawawi stated that impurities from the contaminated water which is less than two (2) <i>qullahs</i> are by change naturally i.e., change of time, sunlight or wind blowing, changes with the addition of water upon it or changes with removing the impurities from the water.</p> <p>Therefore, Singapore government plans which call for the processed water to be mixed in a large pool before being distributed to the public, are <i>sharia</i> compliant.</p> <p>Thus, the used water is <i>mutlaq</i> water.</p>	
<p><b>Fatwa of the Indonesian Ulama' Council</b> (Majlis Agama Indonesia, 2010)</p>	<p>The <i>sharia</i> law of treated water is pure and purifying, if it is processed in accordance with the following <i>fiqh</i> methods:</p> <ol style="list-style-type: none"> <li>1. <i>Tariqah an-Nazh</i>, accomplished by draining or filtering water that is contaminated with impurities, thus ensuring that the water that remains is pure water and none of its properties have been altered.</li> <li>2. <i>Tariqah al-Mukatsarah</i>, accomplished by adding <i>mutlaq</i> water on water that is contaminated with impurities, to reach at least two (2) <i>qullahs</i> for eliminating the impurities element and other properties which caused the water to change.</li> <li>3. <i>Tariqah of Taghyir</i>, accomplished by changing the water that is contaminated with impurities by using aids (<i>mutahhirat</i>) that can restore the original properties of the <i>mutlaq</i> water with the condition that the water need to be more than two (2) <i>qullahs</i> and the aids (<i>mutahhirat</i>) used must be pure and clean.</li> </ol> <p>In fact, the MUI stated that treated water can be used for ablution, bathing, purifying impurities and <i>istinja'</i> (cleanse self impurities) as well as drinking, used for cooking and for other purposes, if it does not endanger health.</p>	<p>Permissible with condition</p>

Source: (Subri et al., 2021)

According to all fatwa issued by the aforementioned authorities, treated water is considered pure or *mutlaq* water after undergoing the related processes because the impurities element is removed throughout the treatment process, particularly when using membrane water treatment technology. As a result, the treated water after having certain processes is considered as *mutlaq* water and is acceptable for religious use.

### The Status (*sharia* law) of Materials Used for Membrane Water Filter

The membrane water filter materials used in membrane water treatment technology also need to be discussed for the status. The membrane water filter is made from a variety of materials that can be classified as organic or inorganic. Inorganic materials such as the ceramic, need to be carefully handle because the materials used consist of powder like clay, dolomite, apatite, fly ash, natural raw clay, and kaolin (Chine clay). The cheapest material is the kaolin, and it is easy to purchase and always being chosen by the manufacturer. Therefore, it is important to know the source of the materials used in filters.

**Table 3:** Types of Membrane Water Filter Materials

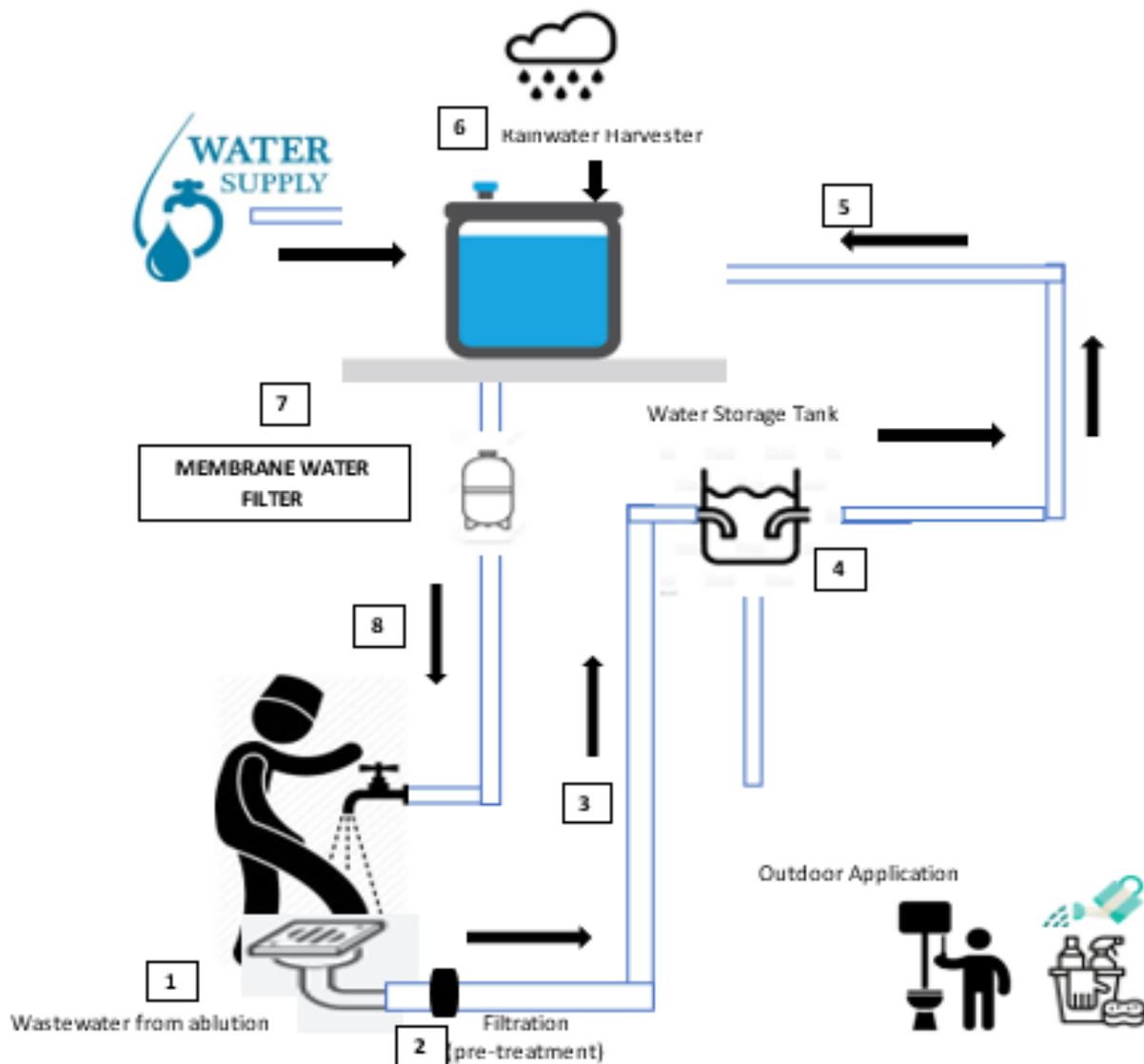
Types of Membrane Materials	Category	Description	Issue
<b>Organic Materials</b>	Polymer (Cellulose based or modified organic polymers)		
<b>Inorganic Materials</b>	glass membrane	<b>glass membrane</b> (silica)	No
	ceramic membrane	<b>ceramic membrane</b> high-cost ceramic material (Combination of metal like aluminum, titanium, silica or zirconium, zinc, tin and iron with non-metal in form of oxide, nitride or carbide to form a variety of inorganic nanoparticles such as carbon nanotubes, alumina or aluminum oxide, titanium oxide, zirconium dioxide or zirconia. Zinc oxide, silver, tin oxide) low-cost ceramic materials (Powder like clay, dolomite, apatite, fly ash, natural raw clay and kaolin (Chine clay))	Yes
	metallic membrane	<b>metallic membrane</b> (the sintering of metal powders like stainless steel, molybdenum or tungsten)	No
	carbon membrane	<b>carbon membrane</b> (polyacrylonitrile, cellulose triacetate, phenol formaldehyde and poly (furfural) alcohol)	No
	zeolitic membranes	<b>zeolitic membranes</b> (used in gas separation, pervaporation and separation of ions from aqueous solution of reverse osmosis)	No

Consumers need to ensure the materials source used in membrane water filters, particularly inorganic materials such as ceramic membranes. Low-cost ceramic materials in form of powder like clay,

dolomite, apatite, fly ash, natural raw clay and kaolin (China clay) need to be more alert because the probability of having haram ingredients. Usually, source of the China clay could be pig bone and other bones that are prohibited to be used by Muslim. In addition too, ash also may have the probability of the sources come from unslaughtered animals and it is considered as impurities in Islam. Basically, the majority of membrane water filter are made up from polymer which is cellulose based or modified organic polymers, and permissible to use as it is no issues with it.

**The Membrane Water Treatment for Ablution Reuse**

Two elements in water treatment need to be viewed which are the source of treated water and the materials used for membrane water filter. If these two elements are *sharia* compliant, thus consumers can use them without a doubt. This figure (figure 1) suggests the application of membrane water treatment as an alternative for water recycling and reuse by treating wastewater from reuse of ablution water.



**Figure 1:** Model of *Sharia* Compliance Membrane Water Treatment

The model works as follows:

1. Wastewater from ablution is discharged and flows into the pipe drain.
2. The wastewater undergoes a pre-treatment process (filtration).

3. The wastewater is then pumped and collected into the water storage tank.
4. The water from water storage tank can be used for outdoor purposes such as flushing toilet, gardening, watering and cleaning process.
5. The water is flowed and collected in a tank holding more than two (2) *qullahs* of water (270 L), making it suitable for religious purposes (ablution).
6. Water is added from the other source, which is rainwater collection and the main water supply.
7. Next, water from the water storage tank flows into the membrane water filter (ultrafiltration or nano filtration process) to filter out all contaminants and produce clean and pure water. Through the membrane filter, the water is considered pure, and follows the drinking water standard set by WHO (from scientific perspectives), and can be drunk directly.
8. Next, the *mutlaq* water is flowing back to be used for ablution purposes.

## Conclusion

There are two aspects that need to be determined for using treated water that are processed by membrane water treatment which are the source of water and the source of materials used as the membrane water filter. The determination of the status (*sharia* law) of treated water usage from the *mutanajjis* and *mustámal* water, the elimination of the impurities from the water is important, and need to be done before the treatment to ensure it is *sharia* compliant and can be considered as *mutlaq* water. There are three purification methods applied in order to change the *mustámal* and *mutanajjis* water into *mutlaq* water which are by *tariqah al-nazh* (eliminate and remove the impurities in water), *tariqah al-mukatsarah* by adding the *mutlaq* water into the *mutanajjis* water to exceed up to two (2) *qullahs* and *tariqah al-taghyir* which is changing the water condition naturally or by using aided substances to eliminate the impurities in water.

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## Conflict of Interest

No potential conflict of interest was reported by the author(s).

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