



اَبُو سَيِّدِي تَكْوَلُ لِي مَا اَنَا
UNIVERSITI
TEKNOLOGI
MARA



PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*“Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation”*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-SS037) REVOLUTIONIZING HYDRATION WITH SELF-CLEANING WATER BOTTLE

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ABSTRACT

This abstract introduces “ Self-Cleaning Water Bottle” which is designed to address the pressing challenges associated with traditional water bottles. For the main objective, this study investigates the competitive landscape of innovation that surrounds self-cleaning water bottles, aimed at meeting the increasing demand for easy and clean hydration options. Through market research and prototype design based on consumer choices, the research assessed the effectiveness of self-cleaning mechanisms and compared them with conventional alternatives. The prototype achieves high consumer satisfaction, effectively removes impurities and offers environmental benefits through reduced reliance on waste bottles, all at competitive price points. To sum up all the information, Self Cleaning Water Bottle is a highly attractive option for individuals who are seeking a reliable and efficient hydration solution.

Keywords: Water Bottle, Self Cleaning, Convenience, Innovation, Hydration.

1.0 INTRODUCTION

The most effective way to ensure the water stays clean and pure with minimal effort on your part. Other than that, the percentage is above 90% can confirm that by using the UV-C Light surely eliminates the harmful germs and bacteria. The product will be lame without a good performance in any situation. The vacuum insulation to maintain your drink's temperature and a spill-proof lid for added convenience. No more hassle of constantly washing and scrubbing your water bottle, start the new era of effortless hydration. There are several factors to develop this self-cleaning water bottle. First and foremost, we need to prioritize the health and well being of users. But at the same time reducing the likelihood of illness caused by contaminated water bottles. Secondly, a self-cleaning water bottle helps to save time while people nowadays may not have time to clean their water bottle regularly. This pursuit of innovation not only enhances the users experience but also set new standards for product hygiene and functionality. We aim to create a product that meets the needs of today's consumers.

2.0 OBJECTIVES

These objectives serve as an outline for the whole product development process, guaranteeing that the final product satisfies standards for usability, sustainability, hygienic design, and technical innovation. Our main goal is to lower the danger of pollution and waterborne illnesses while giving customers access to safe and clean drinking water. In order to lessen the amount of single-use plastic waste, we also hope to promote environmental sustainability by promoting the usage of reusable water bottles. Self-cleaning water bottles maximize convenience by offering a hassle-free way to keep bottles clean, making them a sustainable alternative for long-term use. Ultimately, the goal of this research is to improve UV-C sterilization technology so that self-cleaning water bottles can use it more affordably and effectively while also increasing its effectiveness.

3.0 METHODOLOGY

This innovative self-cleaning water bottle involves a systematic approach to designing an innovative product that prioritizes cleanliness, convenience and sustainability. The following methodology will detail the key features, functionality, usefulness and practicality of the self-cleaning water bottle.

Table 1: Table above shows that the features, functionality, usefulness and practically of Self-Cleaning Water Bottle

Features	Functionality, Usefulness and Practically
UV-C Light Technology	This water bottle's interior is sterilized using UV-C light technology, which successfully gets rid of dangerous germs, viruses, and other diseases.
Antibacterial Materials	Antibacterial materials actively prevent the formation of mold and germs, guaranteeing that the water is always safe to drink.
Self-Cleaning Mode Button	Pressing this button activates the UV-C light technology, to sanitize the inside surface and get rid of any bacteria or smells that could still be there.
Leak-Proof Design	The bottle's built-in leak-proof construction keeps the surrounding area clean by preventing any unintentional spills or leaks.
Insulated Double-Wall	Featuring an insulated double-wall design, the bottle holds the beverage's temperature well within.

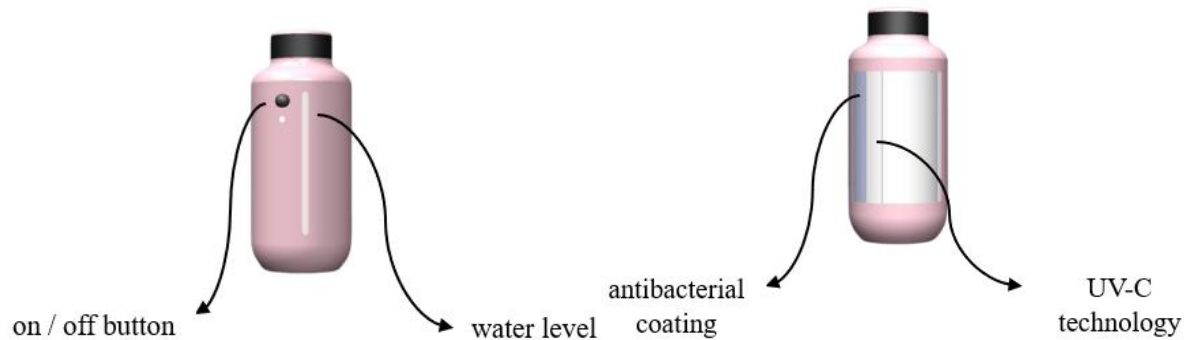


Figure 1 and 2: Self-Cleaning Water Bottle design from outside and inside

4.0 RESULTS

In a recent survey conducted show that the majority with 92.1% respondents expressed that they are very concerned about the cleanliness of their water bottles. Since the condition of their water bottles will affect the level of cleanliness of the water they will drink, 55.3% respondents agreed that they should consider to purchase a self-cleaning water bottle meanwhile 39.5% respondents think that they might purchase a self-cleaning water bottle but it depends on the price that will be offered later. This shows that the innovation idea of self-cleaning water bottle will be one of the people's choice as one of the steps to ensure their health is guaranteed.



Figure 1 and 2: The respondents very concerned about their water bottle and consideration to purchase a self-cleaning water bottle

Furthermore, 42.1% respondents choose features/functionality offered as one the factor that influence their decision to purchase a water bottle. Additionally, the majority with 42.1% responds shows that they prefer UV-C Light as one of the self-cleaning method in their water bottle. Other than that, 39.5% and 18.4% respondents decided on antibacterial coating and filter-based coating for their preferred self-cleaning method. This can conclude that the features that offer by self-cleaning water bottle can give big impact to its users.



Figure 3 and 4: Respondents appoint the factors and self-cleaning method that they preferred

5.0 CONCLUSION

In conclusion, Self-Cleaning Water Bottle is a good solution to the challenges by traditional water bottles, offering enough hygiene, convenience, sustainability and cost effectiveness. Self-Cleaning Water Bottle ensures people of consistent water cleanliness, reducing the risk of bacterial defects and promoting safe hydration for users by using this self cleaning water bottle. With the new features, self cleaning water bottles can fulfill the consumer needs and their ability to minimize plastic waste through long term reuse aligns with environmental sustainability goals.

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