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ABSTRACTS BOOK

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# ECO-FRIENDLY GREEN TEA WASTE DISHWASH

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## ABSTRACT

Tea wastes are largely disposed into the environment without any treatment after tea preparation. Therefore, tea wastes have raised environmental pollution causing environmental degradation. This study proposed to recycle tea waste to better utilize the organic substance and also reduce environmental issues concerning to tea waste. Our study also investigated the various dishwashers in the market and found that commercial dishwashers are high in chemical substance and harmful to human skin. Our scope of study is to recycle household tea waste and to innovate into a natural dishwasher which is “Eco-Friendly Green Tea Waste Dishwash”. The objective of study is to minimize the amount of tea waste released in the environment. Many samples are formulated with different proportions of green tea waste, coconut oil, salt and water. The samples are tested based on the liquid texture and effectiveness cleaning the greasy surfaces by respondents. The findings concluded that Eco-Friendly Green Tea Waste Dishwash is a unique formulation from natural ingredients which is suitable for sensitive and dry skin types. The Eco-Friendly Green Tea Waste Dishwash is a bio-degradable and environmental-friendly product. In conclusion, tea wastes are utilized effectively in order to reduce the impact of environmental pollution.

**Keywords:** tea waste, tea waste management, dishwasher, environmental-friendly, biodegradable





## 1. INTRODUCTION AND OBJECTIVES

According to Food and Agriculture Organization (FOA) Intergovernmental Group (IGG) on Tea studies shows that Global tea consumption and production has increased by 4.4 percent annually over the last decade to reach 5.73 million tonnes in 2016. Due to global demand for tea consumption in developing and emerging countries which caused approximately 40,000 tonnes of tea wastes are produced in tea factories operating in Black Sea region every year (Ozturk 2011). Commonly tea waste are dumped to landfills which can lead to soil pollution and at the same time enormous natural resources is wasted. This study found a solution to reduce the environmental degradation. As a result, we choose the tea waste to recycle and innovate it to an “Eco-Friendly Green Tea Waste Dishwash”. The objective of this study is to recycle tea waste for better utilization of tea waste residues in order to reduce environmental pollutions. In addition, our study formulates a biodegradable and environmental-friendly dishwasher derived from tea waste and to produce a safe, natural and food-grade ingredients dishwasher suitable for all skin types.

## 2. METHOD

Sampling experiment is applied in formulating our Eco-friendly dishwasher, various samples have been mixed with different proportions of green tea waste, coconut oil, salt and water. These samples are tested based on the effectiveness in cleaning the greasy surfaces and also gentle to the skin of users.

Table 1: Proportion of Samples Mix

PROPORTION OF SAMPLES							
INGREDIENTS	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	SAMPLE 6	SAMPLE 7
	25%	20%	30%	25%	30%	5%	10%
	20%	10%	15%	20%	25%	30%	30%
	40%	45%	35%	30%	20%	30%	35%
	15%	25%	20%	25%	25%	35%	25%
<b>TOTAL</b>	100%	100%	100%	100%	100%	100%	100%

Note: Sample 3 is chosen as a final result



**Figure 1.** Comparison of Eco-Friendly Green Tea Waste Dishwash and Product X  
 Note: Result analysis is based on 100 respondents

### 3. FINDINGS AND ARGUMENTS

Findings are gathered based on the primary and secondary data collected using questionnaires, interviews, observations, photographs and videos. The findings concluded that Eco-Friendly Green Tea Waste Dishwash is a break-through the general mind-set of household users because it is a unique formulation from natural ingredients using green tea waste and coconut oil which are suitable for sensitive and dry skin types. The natural antioxidants found in Eco-Friendly Green Tea Waste Dishwash will also protect the skin from further damages. It is a foam-free dishwash but it cleanses thoroughly the greasy surface easily and at the same time saves water too. The Eco-Friendly Green Tea Waste Dishwash is a bio-degradable and environmental-friendly product.

### 4. CONCLUSION AND SUGGESTIONS

As a conclusion our innovation, Eco-Friendly Green Tea Waste Dishwash definitely a potential product in market hence tea waste is utilized effectively in order to minimize the impact on environmental pollution. In future, our product will be developed into different types using natural waste materials such as dried fruits and vegetables peels.

## REFERENCES

1. FOA (2018). “Global tea consumption and production driven by robust in China and India” <http://www.fao.org/news/story/en/item/1136255/icode/> (accessed May 13, 2020)
2. Ozturk, M. (2011). “Evaluation of Tea Waste,” <http://www.mnecevre.com/cay-atiklarinin-degerlendirilmesi-2> (accessed May 15, 2020)
3. Tutus, A Kazaskeroglu, Y., and Cicekler, M. (2015). BioRes.10 (3),5407-5416 International Journal of Environmental Technology and Management and Management,2019 Vo.22 No.4/5, pp.352-363
4. Article (PDF Available) in Indian Journal of Science and Technology 9(42) · November 2016 with 7,845 Reads DOI: 10.17485/ijst/2016/v9i42/89790



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