

**GARBAGE ENZYME AS AN ALTERNATIVE METHOD IN TREATMENT
OF SULLAGE**

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Buat keluarga yang dikasihi, tunang yang diingati & sahabat yang sentiasa disisi..

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ABSTRAK

Kajian ini dijalankan bagi meneroka kebolehlaksanaan menggunakan enzim bahan buangan bagi merawat air basuhan dapur. Enzim disediakan daripada hampas buah-buahan, bahan buangan dapur, gula perang dan air yang mampu mengukuhkan fungsi pembersihan dengan berkesan. Dalam kajian ini, air basuhan dapur diambil di saliran terbuka di Arked Cengal, Arked Meranti dan Kafeteria Kolej 9 dan enzim dibuat di makmal. Air basuhan dapur yang diambil dan dianalisis untuk parameter BOD, COD, TSS dan minyak dan gris. Dari hasil yang diperolehi, semua sampel dirawat oleh enzim bahan buangan menunjukkan penyingkiran BOD ialah 60%, COD dan minyak dan gris hampir 90%, kemudian TSS ialah 80% selepas 7 hari rawatan dengan menggunakan dos enzim berbeza. Arked Meranti, Cengal Arked Dan Kolej 9 Buah Kafeteria Universiti Teknologi Malaysia (UTM) menunjukkan penyingkiran BOD, 85%, COD, 90%, O&G, 63% dan hampir TSS, 100% peratus pengurangan selepas rawatan.

ABSTRACT

This study was conducted to explore the feasibility of using Garbage Enzyme to treat sullage. The enzyme was prepared from fruits dregs, kitchen waste, molasses and water and capable of having reinforcing and cleaning function to work with nature. In this study, sullage was collected at open drainage at Arked Meranti, Arked Cengal and Kolej 9 cafeteria's and enzyme dosage determinations were done at laboratory scale. Sullage collected were analysed for BOD, COD, TSS and oil and grease. From the result obtained all samples treated using garbage enzyme prepared shows removal of BOD was 60% , COD and oil and grease almost 90%, then TSS was 80% after 7 days of treatment with different dosage of enzyme. Treatment from Arked Meranti, Arked Cengal and Kolej 9 Cafeteria in Universiti Teknologi Malaysia (UTM) show removal of BOD was 85%, COD, 90%, O&G 63% and lastly, almost TSS 100% of removals were obtained respectively after the treatment.

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LIST OF SYMBOLS

UTM	-	Universiti Teknologi Malaysia
BOD	-	Biochemical Oxygen Demand
COD	-	Chemical Oxygen Demand
TSS	-	Total Suspended Solid
O&G	-	Oil and grease

CHAPTER I

INTRODUCTION

1.1 Introduction

Sullage water is all of the wastewater from plumbing fixtures except the toilet. Usually waste from the kitchen sink is connected to the septic tank as the high levels of fats, organic matter, suspended solids and microorganisms require treatment before discharge into an absorption trench (or other treatment system). Sullage water does contain high levels of microorganisms that make it unsuitable for spray irrigation. Salts and phosphorus from laundry detergents are pollutants. Sodium salts can cause some clay soils to lose structure and become unsuitable for

absorption. It is therefore advisable to use laundry detergents with low sodium. Generally, liquids and concentrates have lower sodium than powders. Single purpose septic tanks or lint traps should be installed for treating sullage water. Hair and lint in sullage water can clog up the soil and cause absorption trenches to fail. Sullage water may be re-used in a sub soil irrigation area, providing it is screened and filtered to remove hair, lint and other suspended particles. A special design will be required for the sub-soil distribution system along with details of the pumping system and how hair, lint and suspended matter will be removed (Sorell, 2000). In order to save environment, the only way is to control from the root cause. So, it is ease to manage the environmental if the preventing starting from the beginning of waste production.

1.2 Problem of Statement

Restaurants and food centers produce a lot of wastewater rich in oil and grease content which is present in the drain lines. It often congeals within drain and sewer lines and cause blockages. Grease traps may also fail to retain dissolved and emulsified the oil and grease efficiently. If oil and grease is not properly treated by the whole wastewater treatment process, it may enter rivers and oceans with potentially harmful environment impacts.

Major problems that wish to be studied are due to the quality of the sullage at Arked Meranti, Arked Cengal, Kolej 9 Cafeteria Universiti Teknologi Malaysia (UTM)

1.3 Aim of the Study

The purpose of this study is to test out the Garbage Enzyme as an alternative method to treat the sullage. Besides that also, this study will also investigates the effectiveness of garbage enzyme.

1.4 Objectives of the Study

The objectives of this study are:

1. To prepare garbage enzyme from fruits dregs and kitchen waste for sullage treatment.
2. To determine the current sullage conditions of Arked Meranti, Arked Cengal and Kolej 9 Cafeteria.
3. To investigate the effectiveness of using garbage enzyme as an alternative media in sullage treatment.

1.5 Scope of the Study

The scope of the study is:

1. To prepare the enzyme using fruits dregs which is Quinine fruits dreg and kitchen waste.
2. The sullage will be collected is from Arked Meranti, Arked Cengal and Kolej 9 Cafeteria in UTM.
3. The parameter will be analysed are BOD, COD, TSS and oil & grease.