

UNIVERSITI TEKNOLOGI MARA

**PRESENCE OF MICROORGANISMS
IN STREET BEVERAGES THAT ARE
SOLD BY STREET VENDORS AT
PUNCAK ALAM**

NUR DIYANA BINTI MOHD NOR HUSAINI

Project submitted in fulfilment of the requirements for
the degree of
**Bachelor in Environmental Health and Safety
(Hons.)**

Faculty of Health Sciences

January 2023

ACKNOWLEDGEMENT

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

Alhamdulillah, all praise to Allah S.W.T The Supreme Lord of the Universe. Peace and blessings to Nabi Muhammad S.A.W., all prophets and their families. I praise Allah S.W.T for the strength and His blessing in completing my study.

Thousands of thanks to my parents, Mr. Mohd Nor Husaini Bin Ismail and Mrs. for their encouragement, which has given me the strength to complete this journey. I also want to express my sincere gratitude to my supervisor, Dr. Muhammad Afiq Bin Zaki, for all of his help, advice, and knowledge in carrying out this study. With his assistance, all difficulties encountered during study preparation can be successfully overcome. Other than that, a great thank you to the lab staff, especially Mrs. Rohaiza Raban, who helped me a lot with the agar preparation and experimentation using equipment I wasn't used to and who always gave me the best cooperation when I asked for assistance. I want to express my gratitude to all of the street sellers who kindly allowed me to take an environmental swab at their stalls and who recognised that this was part of my responsibility as a student. My technique for collecting samples is truly made simple by them. Last but not least, having friends who support me greatly throughout my writing for this study has been a huge blessing for me. They never let me go through this on my own and always encourage me to have faith in my ability to overcome any difficulties. I hereby extend a huge amount of gratitude and affection to Masturina Binti Abdul Malik, Nurfahimah Atikah Binti Rahim, Nur Syazwani Athirah Binti Milis @ Mohd Hilmi, Barthilda Ak Hudson and Muhammad Nur Hariri Bin Basri. They have been very good to me, and only Allah can repay them. Alhamdulillah once more. Thank you.

TABLE OF CONTENTS

DECLARATION BY STUDENT	ii
INTELLECTUAL PROPERTIES	iii
APPROVAL BY SUPERVISOR	v
ACKNOWLEDGEMENT	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATION	xiii
ABSTRACT	xiii
ABSTRAK	xiv
CHAPTER 1: INTRODUCTION	1
1.1 Background of study	1
1.2 Problem statement	2
1.3 Research objectives	4
1.3.1 General objectives	4
1.3.2 Specific objectives	4
1.4 Research question	5
1.5 Hypothesis	5
1.6 Scope and limitation	5
1.7 Significant of study	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 Background	6
2.2 Foodborne disease	6
2.2.1 Factors that affect the growth of microorganisms in food	7
2.2.1.1 pH	7
2.2.1.2 Water activity	8

ABSTRACT

Street food is known as ready-to-eat food and a beverage or drinks sold by a food vendor on the street to the public at affordable prices and various choices. Therefore, more than 2.5 million people worldwide choose to buy street food every day. However, the food and beverage preparation at street vendors has posed a concern on the level of hygienist food served and sold by the food vendor. Therefore, this study is carried out to investigate the microorganism contamination level found in beverages and environmental swabs sold by street stall at Puncak Alam. Besides, this study also aims to identify the relationship between microorganisms found in the beverages and the microorganism in environmental swabs from the street stalls. In total, 26 street stalls are involved in this study with 104 sample is taken that consists of 52 sample from beverage and another half is from environmental swab sample. The environmental swab sample is taken from beverage scoop and preparation area. As a result, there are presence of microorganisms in beverage and environmental swab but not all street stalls are involved. There is different level of microorganism has been identified in each of the beverage and environmental swab for each street stall. Microorganism contain in beverage and environmental swab have low positive correlation with ($r = 0.291$) and there is no significance between the two of them due to ($p > 0.05$). To be summarize, the food handler required to have more knowledge on preparing beverage in hygiene way by attending food handling courses and practice the knowledge well. This is to minimize the risk of the beverage from get contaminated with microorganisms and safe for human consumption.

Keywords: *Microorganism, street stall, street vendor, beverage, environmental swab.*

CHAPTER 1

INTRODUCTION

1.1 Background of study

Street food is known as ready-to-eat food and a beverage or drinks sold by a food vendor on the street to the public at affordable prices and various choices. Many people buy street food because of its delicacy, attractive appearance, and ease of access (Anelich, 2014). According to Rahim, Bakar, and Zulfakar (2019), more than 2.5 million people worldwide choose to buy street food every day. Therefore, the number of street stalls increased because they saw an opportunity to generate income by selling street food. In addition, street food sales also contributed to developing the country's economy by generating a profit of RM 7 trillion annually. However, the food and beverage preparation at street stalls has posed a concern on the level of hygienist and safety of food sold.

Contaminated food and water may pose a health risk to the consumer with a foodborne disease with symptoms such as upset stomach, stomach cramps, nausea, vomiting, and diarrhoea, due to the presence of microorganisms such as *Escherichia coli* or known as *E. coli*, *Salmonella* and *Staphylococcus aureus* (Centers for Disease Control and Prevention, 2021). *E. coli* is the most common microbe to be discovered in street food, where 200 out of 600 food samples sold by a street stall tested positive for *E. coli* (Mishra, 2015). *E. coli* is a bacteria found in ready-to-eat food, vegetables, dairy products, meat products, drinks, and beverages due to cross-contamination from raw meat to cooked food, improperly cooked food, and contaminated water.