## UNIVERSITI TEKNOLOGI MARA

# POPULATION DYNAMICS AND MOLECULAR PROFILING OF MICROBIAL ECOSYSTEMS DURING SPONTANEOUS FERMENTATION OF *CARICA PAPAYA* LEAVES

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## ABSTRACT

The fermentation of Carica Papaya leaves in this research is spontaneous fermentation. There is none of studies has been doing research on the metabolic compounds in fermented Carica Papaya leaves. This has been a constraint to pursue further analysis on fermented Carica Papaya leaves. Other than that, there was also unknown microbial population. In natural fermentation, the process is operated without the use of starter inoculum. In order to determine the microbial population dynamics, reliable methods for enumeration are required. Sample taken from the fermented Carica Papaya leaf may contain mixed population of bacteria. Therefore, selective media must be employed in which the culture medium used is depends on the target group, the product matrix and the taxonomic diversity of the bacterial background in the fermented Carica Papaya leaf. The chosen medium must allow the growth of the organisms of interest and restrain other microorganisms to encounter.

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#### **CHAPTER ONE**

## **INTRODUCTION**

#### **1.1. RESEARCH BACKGROUND**

The Papaya with a scientific name of (*Carica Papaya L.*) is a distinctive plant with a perfect strait of tapering stem. It has a spindly trunk, leaves that are large and palmately-lobed on top. Meanwhile there are small cymes of yellow flowers and longitudinally-ridged fruits which are close to the stem. It is suitable with the height in between fifteen or twenty feet (Ward).

In order to determine the microbial population dynamics, reliable methods for enumeration are required. Sample taken from the fermented *Carica Papaya* leaf may contain mixed population of bacteria. Therefore, selective media must be employed in which the culture medium used is depends on the target group, the product matrix and the taxonomic diversity of the bacterial background in the fermented *Carica Papaya* leaf. The chosen medium must allow the growth of the organisms of interest and restrain other microorganisms to encounter (Ward).

Viable microorganisms exists on the media can be monitored with the ability to count the bacteria differentially. In common cases, to differentiate between species, it strongly relies on the difference in the colonial morphology. However, it is not always a stable phenotypic trait to identify and quantify microorganisms in the sample.

Fermentation is a proven technology for food processing because of its reasonable function. Fermented foods production is not unfamiliar in food processing industries. It is one of the most seasoned technologies with an ancient record back to the 6000 BC (Caplice and Fitzgerald 1999). This method has been used in the fermentation of meats, milks and vegetables in