

UNIVERSITI TEKNOLOGI MARA

**BATCH ANAEROBIC
FERMENTATION OF GARLIC:
TIME AXIS ANALYSIS OF SPECIES
DIVERSITY**

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ABSTRACT

Allium sativum L. the scientific name for garlic is one of the valuable organic herbs in this world. Garlic is one of the eras old-fashioned remedy in health related problems. This precious herb frequently used in medicinal devotions and also clinically proved in treating certain disease. The diseases that were believed can be treated were hypertension, hypercholesterolemia, diabetes, rheumatoid arthritis, cold and magically it also have ability in minimizing the growth of tumour and directly prevent from atherosclerosis (M.Majewski,2013). The batch anaerobic spontaneous fermentation of garlic was conducted over a 3 months period at room temperature 25°C in 31 identical 500ml mineral water bottles. Whole unpeeled garlic was grinded in a blender (Waring) together with 10% w/w sugar (sucrose) and distilled water. The product was made up with distilled water to produce 10% w/v solution of garlic and sugar in water. Samples were taken at days 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 15, 17, 22, 29, 37, 44, 51, 58, 65, 72 and 82 by harvesting a bottle and discarding it after use. Each sample was plated in different selective media at sample dilution of 10^0 , 10^1 , 10^2 , 10^3 , 10^4 and 10^5 . The selective media comprise of Mc Conkey Agar, Urea Agar, and deMan Rogosa and Sharpe (MRS) agar. Potato Dextrose Agar (PDA) was used to detect fungi. Plate Count Agar (PCA) was used to determine the total viable cells per ml. Each growth was then subjected to gram staining. The results were then used in plotting species diversity versus time for the batch fermentation. As the main purpose is for scaling up, characterized of mixed culture fermentation is base that need to be strong in the mean time of the research project in progress.

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CHAPTER 1

1 INTRODUCTION

1.1 RESEARCH BACKGROUND

Garlic is one of the centuries traditional remedy in health related problems. To be specific there are many disease that garlic or garlic derivatives capable to treat or for the worst it can only reduce the specific disease. Instead of medicinal used, it also can act as spices and herbs in food ingredient. Furthermore, garlic was proven to be very beneficial but at the same time it can be bad at certain conditions. Physically, garlic have strong flavour and also deficiency in odour but people from USA and Korea can eat this without need to cook in easy word is raw garlic (Borrelli F. *et al.*,2007).

Previously, this bulbous plant is easy to get whenever in supermarket, night market or nearby store. But eventually the availability of this plant seems like decreasing and this situation made the supplier to take an advantage in rose up the price of garlic. Based on Star Online stated that price of garlic on 2012, in the Klang Valley rose from RM4 per kilo last month to between RM8 and RM9 while same case happened to Penang from RM 3 increase about RM 1 which made RM 4 each kilograms. Datuk Alex Chuah said that bad weather had concentrated production and pushed up prices in China, the world's major provider of garlic. Apparently, The Sun Daily newspaper reported that garlic is seasonal plant which is harvested once a year, and two years is the duration for the garlic can be stored said by our Malaysian Foodstuff Import and Export Association president Datuk Seri Alex Chuah Poh Kiang,2016. This is the reason for the garlic being so pricey these days.

Futhermore, even though there a lot of thesis and journal mentioned about the advantage of garlic in treating and reducing many disease but there is no further action in developing new product or medicine in making garlic as a based. The reason are because the strong flavor and odor and also the procedure in making medicine is very complex. The sample of garlic medicine need to undergo certain procedure such as toxicity test, clinical test and many more and to be accurate there must be not give any negative effect to consumer or else it will failed.