

UNIVERSITI TEKNOLOGI MARA

**APOPTOTIC ACTIVITY OF PINEAPPLE HONEY
(*ANANAS COMOSUS*) TOWARDS MCF-7 BREAST
CANCER CELL LINES**

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ABSTRACT

Pineapple honey is a Malaysian honey with great benefits which act as an anticancer, antioxidant to prevent oxidative damage, anti-inflammatory agent and others. This study focused on the apoptosis ultra-structural changes of the MCF-7 breast cancer cell lines by the induction of the pineapple honey. Pineapple honey with the properties as an antioxidant such as phenolic compounds and flavonoids content was also discussed. TPC and TFC assays were performed to generate values for total phenolic content and total flavonoids content of pineapple honey. Much emphasize given to transmission electron microscopy method to study on the morphological changes of the apoptosis on MCF-7 which was induced by pineapple honey. Cell shrinkage, plasma membrane blebbing, chromatin condensation and fragmented DNA were the main features of apoptosis observed in the study. Three different concentrations (2.5%, 5%, 10%) of the pineapple honey were tested at optimum 48 hours incubation time, and 10% concentration was the best to present the apoptotic cell changes. The results acquired were proof to why pineapple honey is also a suitable candidate of antioxidant thus an anticancer to fight against the oxidative stress to cure breast cancer.

CHAPTER ONE

INTRODUCTION

1.1 Background of study

Breast cancer is the most frequent cause of cancer death among women worldwide. Incidence rates are exceptionally high in more developed countries, but nevertheless rates in less developed countries are low but gradually increasing [1].

The factors such as age, family history, hormone replacement therapy (HRT), menarche and menopause age are the risk factors for breast cancer [2]. Breast cancer incidence elevated with age [3]. The risk of combined HRT was later found out by Women's Health Initiative (WHI) such as increased risk of breast, venous thromboembolism (VTE), stroke and myocardial infarction thus far has outweighed the reduced risk of hip fracture and colon cancer [4]. Women who experience menarche at such early age and menopause stop at older age show increased risk of breast cancer [5].

Conventional treatments for breast cancer such as, lumpectomy, mastectomy, radiotherapy, chemotherapy, hormone therapy and targeted hormone have various side effects. By performing mastectomy, majority of the breast tissue is removed permanently. Thus, this create a problem to women mostly, where the breast is a symbol of feminine identity, womanhood, sexuality, attractiveness, nurturance, and motherhood are some problems directly related to the breasts [6]. This may also