

UNIVERSITI TEKNOLOGI MARA

**INVESTIGATION OF ANTIOXIDATIVE
ACTIVITY AND PHENOLIC CONTENTS IN
DIFFERENT SEA CUCUMBER FORMULATIONS**

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ABSTRACT

Sea cucumbers were widely consumed in Asian country as health supplement as they were claimed to exhibit various health benefits such as antioxidant activity. Thus, the aim of this study was to measure the total phenolic content and assessing the free radical scavenging activity of different sea cucumber formulations and also to develop a standard HPTLC method for assessing free radical scavenging activity of these phenolic compounds.

Sea cucumber capsules were found to have highest total phenolic contents and exhibit antioxidant activity while the dried and frozen sea cucumber did not contained phenolic compounds and antioxidant activity. The free radical scavenging activity of the sea cucumber capsules was quantified by using Gallic Acid Equivalent and the value was 13.75 GAE (mg/L). However, the antioxidant activity exhibited was probably not coming from the sea cucumber extracts but from the other ingredients of the capsules.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Sea cucumber or *Holothuroidea* is a soft-bodied wormlike animal that belongs to the echinoderms group. Habitually, they tend to live on the sea floor in deep seas. They play an important role in maintaining the ocean ecosystem by recycling nutrients back into the sea. They are also important in traditional medicines especially in Asian countries, such as China. In China, sea cucumber is also known as *haishen*, which means ginseng of the sea as they are eaten by Chinese people for their tonic value, not the seafood taste (Anderson, 1988). In addition, in Malaysia and China, sea cucumbers have been well recognized as a traditional remedy for use of treatment against various common diseases such as hypertension, asthmas, rheumatism, cuts and burns, impotence and constipation. It is also believed that sea cucumber has several unique biological and pharmacological activities, such as anti-angiogenic, anticancer, anticoagulant, anti-hypertension, anti-inflammatory, antimicrobial, antioxidant, antithrombotic, antitumor and wound healing. Recent studies have identified a huge number of bioactive compounds in the sea cucumber that contribute to these medicinal benefits. For example, the triterpene glycosides saponins, chondroitin sulfates, glycosaminoglycan, sulphated polysaccharides, sterols, phenolics, peptides, cerberosides and lectins (Bordbar, Anwar, & Saari, 2011).