ตัวบ่งชี้ที่ 2.3 ผลงานทางวิชาการของอาจารย์ประจำและนักวิจัย (เชื่อมโยงกับเกณฑ์ในระดับหลักสูตร ตัวบ่งชี้ที่ 4.2)วิชาการระดับชาติ ปีปฏิทิน (ค่าน้ำหนัก 0.40)

ตารางที่ 4.2-2 บทความวิจัยหรือบทความวิชาการฉบับสมบูรณ์ที่ตีพิมพ์ และผลงานที่ได้รับการจดอนุสิทธิบัตร ปีปฏิทิน (ค่าน้ำหนัก 0.40)

ลำดับที่	ชื่อบทความวิจัยฉบับสมบูณ์ (Full Paper) ที่ได้รับการตีพิมพ์สืบเนื่องจากการประชุมวิชาการ (ไทย/อังกฤษ)	ชื่อเจ้าของผลงานและผู้ร่วม	ชื่อการประชุมวิชาการ วัน-เดือน-ปี สถานที่/จังหวัด/ประเทศที่จัด / เลขหน้า ไม่นับซ้ำ แม้ว่าบทความวิจัยนั้นจะได้รับการตีพิมพ์สืบเนื่องจากการประชุมวิชาการ หลายครั้งก็ตาม	หลักฐาน/ ตารางประกอบ
กลุ่มวิทยาศาสตร์และเทคโนโลยี				
1	Species Diversity and Spatial Distribution of Macroinvertebrates on the Intertidal Zone of Rajamangala Beach, Trang Province, Thailand	Khwanta Tantikamton Jantima Rodpai Prasit Srinakorn Suwit Jitpukee	The 2nd Environment and Natural Resoures International Conference (ENRIC 2016) Interdisciplinary Approaches to Save Future Earth Environment 16-17 November, 2016 Phra Nakhon si Ayutthaya Province, Thailand	
2	Application of Response surface Methodology For Extraction optimization of protein hydrolysate from hard Clam (Meretrix casta) Based on Antioxidant	Nopparat Mahae Darika Awapak Donrudee Pichairat Natta Kachenpukdee	The42nd Congress on Science and Technology of Thailand (STT42) "Knowledge of the Land towards Innovation for Sustainable Future" November 30 - December 2, 2016 Venue: Centara Grand at Central Plaza Ladprao Bangkok, Thailland	
	รวมจำนวนบทความทั้งหมด			.....2..... เรื่อง

เรื่องที่ 1

Species Diversity and Spatial Distribution of Macroinvertebrates on the Intertidal Zone of Rajamangala Beach, Trang Province, Thailand

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Abstract

The study on species diversity and spatial distribution of macroinvertebrates on the intertidal zone of Rajamangala beach, Trang province, Thailand aims to investigate species, numbers and spatial distribution changes of polychaetes, mollusks and crabs along the 2 km beach. Four sampling stations from an adjacent of estuary to the end of the beach, which is nearby a hill, were examined. Each station was divided into 4 lines: highest tide, 100 m, 200 m and 300 m in distance from the highest tide line. The results showed that 23 polychaete, 23 mollusk and 19 crab species were found. The highest polychaete diversity was recorded at the lowest tide line. At 200 m and 300 m from the highest tide line had highest mollusk species diversity whereas at 100 m from the highest tide line had highest crab species. *Lumbrineris punctata* McIntosh, 1885 and *Scoloplos* spp. were dominated polychaete species of the 200 m and 300 m whereas *Glycera* spp. were frequently found at the 100 m from highest tide line. For mollusk species, high densities of *Nassarius* spp., *Pilucina* sp. and *Donax incarnatus* Gmelin, 1791 were found. Crab species of the beach were in Infraorder Brachyura (15 species) and Anomura (4 species). The most abundant species was *Dotilla myctiroides* (Milne-Edwards, 1852) followed by *Scopimera proxima* Kemp, 1919. The species diversity of all sampling stations had similar distribution but from the highest tide line to the lowest tide line had different pattern of macroinvertebrate species distribution.

1. Introduction

Trang province, magnificent coastal as its long coastline stretches along the Andaman Sea. In addition, the province has two major rivers flowing through it, the Trang River and the Palian River. The coast in the province has particular oceanographic characteristics. Rajamangala beach located in Rajamangala University Srivijaya, Trang campus. It is a 2 km long sandy to sandy/muddy beach. Mangrove areas, tidal flat, rocky coast also occur along this beach. Because of the complex habitats and lack of information about macroinvertebrate community of the beach, the study on benthic macroinvertebrate is needed to provide some basic data. The community pattern can be used for comparisons for any critical disorder that may occur in the area. Benthic macroinvertebrates have limited mobility that restrict their ability to avoid adverse conditions, so they are commonly used as environmental indicators. It become important to understand how the beach ecosystems will response to unprecedented environmental changes. Exposed sandy beaches are physically dynamic habitats, inhabited by specialized biotic assemblages [1]. Most beach species are found in no other environment, their unique adaptations for life in these dynamic systems such as mobility, burrowing ability, protective exoskeletons, rhythmic behavior [2]. Changes in organism abundance of difference zones may naturally exist along gradients of the beach. Moreover, the intertidal ecology is dynamic and the distribution of the organisms is likely influenced by the specific swash characteristics of the incoming and outgoing tide [3]. The analysis of a macrofauna pattern showed declining along a gradient of environmental stress [4]. Benthic macroinvertebrates related to sediment characteristics in the coastal zone [5]. Changes in the textual characteristics of the sediment and the higher level of organic carbon might be responsible for reducing the frequency of occurrence and abundance of the invertebratefauna especially at stations located near effluent outfall to the stations located far away from discharge point. Species richness and evenness of distribution have indicated that the disturbance of the environment resulting in changes of sensitive and tolerant benthic communities [6]. The density of benthic macrofauna on the coastal seabed of the Andaman Sea ranged from 200 to 1,000 individuals/m^2. The majority were polychaetes followed by crustaceans, echinoderms, mollusks and chordates [7]. Understanding about the macroinvertebrate distribution pattern is necessary to provide information on the beach environmental conditions as part of biological characteristic. This study was to fill the blank of information about the benthicfauna population structure. Therefore, primary objectives of the study were to reveal species diversity of macroinvertebrates on Rajamangala beach, Trang province, Thailand and to determine the spatial distribution of the organisms along the distance from the highest tide line to the approximate lowest tide line.

2. Methodology

2.1 Sampling area

The study was performed on Rajamangala beach. It is a very shallow sandy beach where mangrove areas and Sikao canal are found on the northward end of the beach. At the southward, the rocky patches partially scatter on the beach and a small mountain is located there. Intertidal flat sediments of this area are muddy and the area is sheltered by the mountain. The central part is exposed area and its tidal flat is longer than the northward end.

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เรื่องที่ 2

I1_071_PF: APPLICATION OF RESPONSE SURFACE METHODOLOGY FOR EXTRACTION OPTIMIZATION OF PROTEIN HYDROLYSATE FROM HARD CLAM (*Meretrix casta*) BASED ON ANTIOXIDANT

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Abstract: Response surface methodology was employed to optimize the extraction condition of high antioxidant protein hydrolysate from hard clam (*Meretrix casta*). Three independent variables were ratio of water to hard clam meat, enzyme (Protamex) concentration and extraction time. The effect of variables was estimated by Box-Behnken design. Statistical analysis indicated two independent variables, ratio of water to hard clam meat and enzyme (Protamex) concentration significantly affected antioxidant activity ($p < 0.05$). The ratio of water to hard clam meat of 1:8, enzyme (Protamex) concentration of 1.5% and extraction time of 5.5 hours were found to be optimal for high antioxidant protein hydrolysate extraction form hard clam. Under these conditions, the predicted antioxidant activity of protein hydrolysate was 118.95 μg ascorbic acid equivalents/ 100 ml.

Introduction: Marine organisms, which make up approximately one half of the total global biodiversity, are rich reservoirs of structurally diverse biofunctional components[1]. Especially, some of these bioactive compounds are proteinaceous in nature (or origin) and include proteins, peptides and amino acids. Moreover, being rich sources of protein, some marine organisms, are ideal starting materials for the generation of protein derived bioactive peptides. The potential of macroalgae as a source of bioactive nitrogenous compounds has recently been reviewed elsewhere[2].

Hydrolysis of fish proteins, using proteases for the generation of bioactive peptides, is an area of active research due to their various health benefits[3]. These peptides, referred to as bioactive peptides, comprise 2–20 amino acid residues which are inactive within the sequence of many food proteins and exhibit biological activity when released by enzymatic hydrolysis[4]. Fish derived protein hydrolysates and peptides display biological activity which included antioxidant[5-7], antimicrobial activity[8], ACE inhibitory[9-10], antihypertensive[11-12], anticoagulant[13], calcium binding activity[14-15], appetite suppressant[16] and HIV-1 protease inhibitory activity[17].

Response surface methodology (RSM) is a very useful statistical technique for complicated processes optimization and it has been used effectively in many fields for optimization studies. RSM is used and analyzed through different methods including experimental strategies, mathematical methods, and statistical inference. Using these methods, the RSM focuses on the optimal condition in foods and pharmaceutical research by examining the different variables and their effect [18-19]. Box-Behnken design (BBD), one of the RSM, only has three levels, and needs fewer experiments. It is more efficient and easier to arrange and interpret experiments in comparison with others and widely used by many researches [20-21].

Although numerous protein hydrolysate from fish have been reported, protein hydrolysate from hard clam have not been extensively studied. Then the objective of this study was to investigate the optimum condition for high antioxidant protein hydrolysate extraction from hard clam using Response Surface Methodology.

Methodology:

Protein hydrolysate preparation: Protein hydrolysate from hard clam (*Meretrix casta*) was prepared according to the modified method of Tsai et al.[22]. Cleaned hard clam was boiled with tap water in 1:1 (w/w) ratio for 40 min. After that, hard clam meat and liquid portion were separated. Hard clam meat was freeze-dried and granulated. The powder of hard clam meat was used for protein hydrolysate preparation. Hard clam meat powder was homogenized with deionized water in 1:8, 1:10 and 1:12 (w/w) ratio for 2 min and boiled for 10 min. Then it was cooled to room temperature. Protease enzyme (Protamex) was added at 0.5, 1 and 1.5 % (the ratio of enzyme to hard clam meat powder was 1:100, w/w) to the hard clam homogenate and was incubated at 50 °C for 4.5,5 and 5.5 h and heated at 98 °C