EXPERIMENTAL METHODS IN MODERN BIOTECHNOLOGY

Editors

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CONTENTS

Chapter 3. Methods for Screening the Potential Natural Compound for Treating Metabolic Disorder Diseases: Anti-Inflammatory and Griess Assay [Nitric Oxide (NO) Measurement]

Azura Amid, Sulawatie Semail, Wan Dalila Wan Chik and Hammed Ademola Monsur

Chapter 4. Factors Affecting Enzyme Assays

Hamzah Mohd Salleh

Chapter 5. Techniques of Extraction and Purification of Fucoxanthin from Brown Seaweeds

Irwandi Jaswir, Dedi Noviendri, Hamzah Mohd Salleh, Muhammad Taher and Kazuo Miyashita

Chapter 6. Fundamentals of Proximate Analysis in Food Products

Irwandi Jaswir and Asiyanbi-Hammed Tawakalit Tope

Chapter 7. Fish Gelatin Production: Extraction Method and Quality Analysis

Irwandi Jaswir, Hammed A. Monsur and Hamzah M. Salleh

Chapter 8. Application of Fourier Transform Infrared Spectroscopy Edible Fats and Oils Analysis

Mohamed Elwathig Saeed Mirghani

Chapter 12. Response Surface Methodology (RSM) Design for Bioreactor Operation

Maizirwan Mel and Najiah Nadir

Chapter 13. Screening Natural Compounds for Antibacterial Activity by Disc Diffusion Method

Raha Ahmad Raus

CHAPTER 7

Fish Gelatin Production: Extraction Method and Quality Analysis

Irwandi Jaswir, Hammed A. Monsur and Hamzah M. Salleh

1. Introduction

Gelatin is a protein and multifunctional hydrocolloids. It is obtained from fibrous protein (collagen) such as those from animals' skin, bones or microbes. Gelatin sourced from fish has been identified as the most safe and acceptable due to its halal status and its epidemic free nature as compared to other counterpart sources i.e. porcine and bovine. Collagen is well-packed, rigid, triple-helical structure Thomas, 2005). Collagen molecules in fibrils are organized in staggered arrays that are stabilized by hydrophobic interactions resulting from the close packing of triple-helical units. During that determines its characteristic tensile strength. The twist in the helix cannot be pulled out under tension due to its component polypeptide chains are twisted in the opposite direction (Donald and extraction, this arrangement should be partially denatured with acid and base pretreatment. Gelatin, one of the most popular biopolymers, is widely used in food, pharmaceutical, cosmetic, and photographic applications because of its unique functional and rheological properties. Gelatin offers many special properties that are not easily imitated by other hydrocolloids. These include: "melt-in-the-mouth" property, thermal reversibility, surface activity, tailor-made application and easy to use. Gelatin is the only ingredient that exhibits the behavior of slow melting when subjected to temperature below physiological temperature of humans.

Gelatin can either be Halal, Non Halal or Haram simply due to the source. According to Dr. Su`aadSalih, Professor of Fiqh at Al-Azhar University, if it is an animal whose meat is Halal, such as cow, camel, sheep and so on, then gelatin is Halal, and so is the case with all foods prepared from it(Jamil, 2009). However, if the animal is of Haram meat such as pigs, then the gelatin made of it is unlawful. This is the ruling on gelatin extracted from animals. He added that as for fish, vegetable and artificial gelatin, they are Halal and there is nothing wrong in eating and using them. In addition, even if the animal is Halal, the method of slaughtering might jeopardize it usage for Halal food. According to a Shari`ah scholar, Sheikh `Abdus-Sattar F. Sa`eed, Professor of the Exegesis of the Qur'an at Al-Azhar University, if the animal is slaughtered by one of the People of the Scripture, or if the butcher is unknown, then the meat is Halal and the gelatin is Halal too(Jamil, 2009). However, if the animal is slaughtered by means of electric shock, suffocation, and other unlawful ways, then the meat is Haram and gelatin is Haram too, because it is a product of that unlawful animal (Jamil, 2009). In a nutshell, gelatin is still categorized as being doubtful ingredient in term of its Halal status unless it is clearly specified (Riaz and Chaudry, 2004).It is very difficult to trace the source of gelatin and even more difficult to determine the method of slaughtering for any permissible animal, hence fish gelatin could be seen as only safe source.

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