A REVIEW: THE POTENTIAL OF THREE DIFFERENT TYPES OF FISHBONE FLOUR (*Clarias batrachus, Tilapia nilotica,* and *Channa striata*) AS AN ANTI-AGING INGREDIENT IN FOOD PRODUCTS

REVIEW : POTENSI TIGA JENIS TEPUNG TULANG IKAN YANG BERBEDA (*Clarias batrachus, Tilapia nilotica,* dan *Channa striata*) SEBAGAI BAHAN ANTI-PENUAAN DALAM PRODUK PANGAN

BACHELOR THESIS

Submitted to fulfill some of the terms to obtain a Bachelor degree of Food Technology

By :

ANITA CAROLINE SUSANTO

17.12.0024

DEPARTMENT OF NUTRITION AND CULINARY TECHNOLOGY
FACULTY OF AGRICULTURAL AND FOOD TECHNOLOGY
SOEGIJAPRANTA CATHOLIC UNIVERSITY
SEMARANG

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Diajukan oleh	:	Anita Caroline Susanto
NIM	:	17.I2.0024
Tanggal disetujui	:	07 September 2020
Telah setujui oleh		
Pembimbing 1	:	Dr. Ir. Lindayani M.P.
Penguji 1	:	Dr. Dra. Alberta Rika Pratiwi M.Si.
Penguji 2	:	Dr. Ir. Bernadeta Soedarini M.P.
Ketua Program Studi	:	Dr. Dra. Alberta Rika Pratiwi M.Si.
Dekan	:	Dr. Robertus Probo Yulianto Nugrahedi S.TP., M.Sc.

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Anita Caroline Susanto

SUMMARY

As a maritime country, Indonesia produces a lot of fish products that have been exported and domestically market mainly as fillets. Every year the production of fish fillets is increasing so does the fish by-products, because 30% of fish are fish by-products that still limited in utilization and majorly become waste. Fishbone flour is an output from one of the fish by-products that have high levels of amino acids and polyunsaturated fatty acids, low levels of carbohydrate and glycemic index that is suitable to be used in food industries. One of the biggest problems for humanity is aging. Aging is a process characterized by a gradual loss of physiological integrity, which leads to the death of almost all physiological functions and increased susceptibility to death. So, anti-aging products become precious, and most wanted in humanity. Unfortunately, anti-aging products are so expensive. So, the development of anti-aging products that cheaper yet effective is necessary. Many studies have developed nutritious food using Fishbone flour as calcium fortification. But there is no studies that discuss the use of fish bones to make anti-aging products in food. Fishbone flour contains collagen that if through thermal denaturation will change to gelatin that has better functional properties in food products than bovine collagen. Its gelatin also can be used as food additives and functional food as an anti-aging agent for humans. This review discuss the potential of three different types of freshwater fishbone flours which are fishbone flours from Snakehead fish (*Channa striata*), Catfish (*Clarias batrachus*), and Nile Tilapia (*Tilapia nilotica*) as an anti-aging ingredient in food products. Based on the literature study conducted on the comparison of the nutritional content of the three fish bones, it can be concluded that snakehead fish bones (*Channa striata*) are the most potential fish bones as an anti-aging ingredient in food products. Further studies in the form of experiments are needed to obtain accurate research results.

RINGKASAN

Sebagai negara maritim, Indonesia menghasilkan banyak produk ikan yang diekspor dan dijualkan di pasar domestik terutama sebagai fillet. Setiap tahun produksi fillet di Indonesia terus meningkat begitu pula dengan produk sampingan ikan, karena 30% ikan tersusun atas produk sampingan ikan yang pemanfaatannya masih terbatas sehingga mayoritas menjadi limbah. Tepung tulang ikan adalah salah satu hasil dari produk sampingan ikan yang memiliki kandungan asam amino dan asam lemak tidak jenuh rantai panjang yang tinggi, serta memiliki kandungan karbohidrat dan indeks glikemik yang rendah sehingga cocok digunakan pada industri pangan. Salah satu masalah terbesar dalam kehidupan manusia adalah penuaan. Penuaan adalah suatu proses yang dikarakteristikkan sebagai hilangnya integritas fisiologis secara bertahap, yang mengarah kepada kematian hampir semua fungsi fisiologis dan meningkatkan kerentanan terhadap kematian. Jadi, produk anti-penuaan menjadi berharga dan sangat diinginkan dalam kehidupan manusia. Sayangnya, produk anti-penuaan itu sangat mahal. Jadi, pengembangan produk anti-penuaan yang lebih murah dan efektif itu diperlukan. Banyak studi yang telah mengembangkan makanan bernutrisi menggunakan tepung tulang ikan sebagai penambah kalsium. Tetapi tidak ada studi yang membahas penggunaan tulang ikan sebagai produk anti-penuaan pada makanan. Tepung tulang ikan mengandung kolagen yang jika mengalami denaturasi termal akan berubah menjadi gelatin yang memiliki sifat fungsional yang lebih baik daripada kolagen dari sapi atau babi. Gelatin dari tulang ikan ini juga dapat digunakan sebagai bahan tambahan pangan dan pangan fungsional sebagai agen anti-penuaan pada manusia. Kajian ini membahas tentang potensi dari tiga jenis tepung tulang ikan air tawar yakni tepung tulang ikan dari ikan gabus (Channa striata), ikan lele (Clarias batrachus), dan ikan nila (Tilapia nilotica) sebagai bahan anti-penuaan pada produk pangan. Berdasarkan studi literatur yang dilakukan terhadap perbandingan kandungan nutrisi ketiga tulang ikan, maka dapat disimpulkan bahwa tulang ikan gabus (Channa striata) merupakan tulang ikan yang paling berpotensi sebagai bahan anti-penuaan pada produk pangan. Studi lanjutan berupa eksperimen diperlukan untuk memperoleh hasil penelitian yang akurat.

FOREWORD

Praise and thank the Lord Jesus Christ for the grace given to the author so that she can complete this thesis entitled "A REVIEW : THE POTENTIAL OF THREE DIFFERENT TYPES OF FISHBONE FLOUR (*Clarias batrachus, Tilapia nilotica,* and *Channa striata*) AS AN ANTI-AGING INGREDIENT IN FOOD PRODUCTS". The preparation of this thesis aims to fulfill one of the requirements in order to obtain a Bachelor's degree in Food Technology at the Faculty of Agricultural and Food Technology, Soegijapranata Catholic University,Semarang.

The completion of the thesis, of course, cannot be obtained without the role of various parties who have helped and provided support during the writing of this thesis. Therefore, on this occasion, the author would like to thank:

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In preparing this thesis, the author realizes that this thesis still has many shortcomings and limitations. Therefore, the author apologizes if there are errors, deficiencies, or things that are less pleasing to the reader. The author also accepts criticism and suggestions for this thesis. Finally, the author hopes that this thesis can provide benefits to readers and all those who need it.

Semarang, September 3rd 2020

Author,

Anita Caroline Susanto

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