



**UNIVERSITI PUTRA MALAYSIA**

**OPTIMISATION, PROFILING AND *IN VIVO* STUDIES ON WHEY  
PROTEIN CONCENTRATE HYDROLYSATES WITH ANGIOTENSIN-I  
CONVERTING ENZYME INHIBITORY AND ANTIOXIDANT ACTIVITIES**

**FATIMA ABDELHAMEED HUSSEIN HASSAN**

**FSTM 2020 12**



**OPTIMISATION, PROFILING AND *IN VIVO* STUDIES ON WHEY  
PROTEIN CONCENTRATE HYDROLYSATES WITH ANGIOTENSIN-I  
CONVERTING ENZYME INHIBITORY AND ANTIOXIDANT ACTIVITIES**

By

**FATIMA ABDELHAMEED HUSSEIN HASSAN**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**January 2020**

## **COPYRIGHT**

All material contained within the thesis, including without limitation text, logos, icons, photographs, and all other artwork, is copyright material of Universiti Putra Malaysia unless otherwise stated. Use may be made of any material contained within the thesis for non-commercial purposes from the copyright holder. Commercial use of material may only be made with the express, prior, written permission of Universiti Putra Malaysia.

Copyright © Universiti Putra Malaysia





## UNIVERSITI PUTRA MALAYSIA

### STATUS CONFIRMATION FOR THESIS / PROJECT REPORT AND COPYRIGHT

ACADEMIC SESSION : \_\_\_\_\_

TITLE OF THESIS / PROJECT REPORT :

---

---

---

NAME OF STUDENT : \_\_\_\_\_

I acknowledge that the copyright and other intellectual property in the thesis/project report belonged to Universiti Putra Malaysia and I agree to allow this thesis/project report to be placed at the library under the following terms:

1. This thesis/project report is the property of Universiti Putra Malaysia.
2. The library of Universiti Putra Malaysia has the right to make copies for educational purposes only.
3. The library of Universiti Putra Malaysia is allowed to make copies of this thesis for academic exchange.

I declare that this thesis is classified as :

\*Please tick (v )

**CONFIDENTIAL**

(Contain confidential information under Official Secret Act 1972).

**RESTRICTED**

(Contains restricted information as specified by the organization/institution where research was done).

**OPEN ACCESS**

I agree that my thesis/project report to be published as hard copy or online open access.

This thesis is submitted for :

**PATENT**

Embargo from \_\_\_\_\_ until \_\_\_\_\_  
(date) (date)

**Approved by:**

\_\_\_\_\_  
(Signature of Student)  
New IC No/ Passport No.:

Date :

\_\_\_\_\_  
(Signature of Chairman of Supervisory Committee)  
Name:

Date :

**[Note : If the thesis is CONFIDENTIAL or RESTRICTED, please attach with the letter from the organization/institution with period and reasons for confidentially or restricted. ]**