

UNIVERSITI TEKNOLOGI MARA

**THE EFFECT OF HIGH FAT DIET ON M
CELLS AND TIGHT JUNCTION
PROTEINS OF INTESTINAL MUCOSA
OF RATS**

AUNI AQILAH ZAINAL ABIDIN

MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as reference work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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Name of Student : Auni Aqilah binti Zainal Abidin

Student I.D No. : 2014616382

Programme : Master of Medical Science (Biochemistry) - MD751

Faculty : Faculty of Medicine

Thesis title : The Effect of High Fat Diet on M Cells and Tight
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Signature of Student :

Date : August 2016

ABSTRACT

M cells and intestinal tight junction proteins (TJPs) are important components of intestinal barrier which is compromised by high fat diet (HFD). Objective of this study was to determine the effect of HFD on M cells and TJPs of intestinal mucosa of rats. Four weeks old, twenty male Wistar rats were divided into control (n=10) and HFD (n=10) groups. After 6 weeks, ileum segments with Peyer's patches (PP) and feces were collected. Immunohistochemical staining and fecal calprotectin (FCP) level was measured. M cell expression in the PP (1.125 ± 0.354 vs 2.3 ± 0.675 , $p = 0.004$) and villi (1.625 ± 0.518 vs 2.3 ± 0.458 , $p = 0.045$) were significantly higher in HFD group than the control. Claudin-3 expression in the PP and villi was not different significantly between the two groups. Claudin-4 expression in the PP (2.1 ± 0.583 vs 1.6 ± 0.669 , $p = 0.018$) and villi (1.975 ± 0.670 vs 1.55 ± 0.597 , $p = 0.015$) was significantly decreased in HFD group than the control. Occludin expression in the PP of HFD group was significantly decreased compared to the control group (2.0 ± 0.633 vs 1.2 ± 0.4 , $p = 0.001$) but was not significantly decreased in the villi. FCP in HFD group was significantly higher compared to the control (40.172 ± 4.0852 vs 49.058 ± 1.174 , $p = 0.016$). HFD for 6 weeks caused increased M cell expression and reduced claudin-4 and occludin expressions in male Wistar rats which were associated with intestinal inflammation.

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TABLE OF CONTENTS

	Page
CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF SYMBOLS	xvi
LIST OF ABBREVIATIONS	xvii
CHAPTER ONE: INTRODUCTION	1
1.1 Research Background	1
1.2 Problem Statement	3
1.3 Objectives	4
1.4 Significance of Study	4
1.5 Expectation of the Study	5
CHAPTER TWO: LITERATURE REVIEW	6
2.1 Gastrointestinal Tract	6
2.1.1 Gastrointestinal Mucosa	7
2.2 Peyer's Patches	9
2.3 M Cells	10
2.3.1 Cytokeratin	11
2.4 Tight Junction Proteins	12
2.4.1 Claudin	13
2.4.2 Claudin-3	14
2.4.3 Claudin-4	14
2.4.4 Occludin	16