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HUMAN EMBRYONIC STEM CELLS (H-ESCs) FOR THERAPY AND RESEARCH PURPOSES: A FIQHĪ ANALYTICAL STUDY

BY

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A dissertation submitted in fulfilment of the requirement for the degree of Master of Islamic Revealed Knowledge and Heritage (Fiqh and Uṣūl al-Fiqh)

Kulliyyah of Islamic Revealed Knowledge and Human Sciences
International Islamic University
Malaysia

AUGUST 2010

ABSTRACT

This research attempts to examine the Islamic point of view towards one biomedical case study, namely, human embryonic stem cells (h-ESCs). H-ESCs are claimed to possess a brilliant potency called pluripotency, useful in treating debilitating diseases which are known with their difficulties to find adequate healings. For instance, leukemia, multiple sclerosis, ischemic heart disease, Parkinson's, Alzheimer's and so on. This groundbreaking potential really makes scientists dream to re-grow damaged human tissues and organs. This may become a reality because h-ESC is an unspecialized cell and can differentiate into many types of cells. Some people claimed that it is a kind of hype only. In addition, the destruction of human embryos after extracting the stem cell involved in this method has created a lot of controversial debates based on ethic and religious perspectives that are either engulfing clinical purposes or research purposes. The researcher will hereby present the outlook of *ijtihād* in this modern medical issue by adopting Islamic ruling principles in terms of *Maqāṣid al-Sharīʿah* and *Qawaʿid Fiqhiyyah*. Furthermore, the researcher also examines the situation of h-ESC for therapy and research in Malaysia as a case study in order to know the progress of its applications. This study arrives at the conclusion that even the implementation of h-ESC for therapy and research as generally approved by National Fatwā Council also known as *Muzakarah Jawatankuasa Fatwa Majlis Kebangsaan Bagi Hal Ehwal Agama Islam Malaysia*, it is still a debatable issue that questions human dignity (*ḥurmah*). Due to that, the researcher is proposing a more cautious solution as she holds a different view from the Malaysia National Fatwa Council. Finally, some recommendations regarding this issue have also been included.

خلاصة البحث

يحاول هذا البحث القيام بدراسة تحليلية حول نظرة الإسلام تجاه قضية الخلية في مجال الطبّ الحيوي أو ما يمكن أن يسمّى بالخلايا الجذعية الجنينية، ويُدعى أنّها تملك قدرات عالية و متعددة لمعالجة الأمراض الخطيرة المعروفة بصعوبة معالجتها، مثل، سرطان الدم (اللوكيميا) وتصلب الأنسجة المتعددة ومرض نقص تروية القلب ومرض ' الشلل الرعاشي (الباركنسومنـــزم) ومرض الخوف المبكر (الزهايمر) وغير ذلك من الأمراض. وهذه الطاقة الرائدة تجعل العلماء يأملون بإعادة النمو الأنسجة والأعضاء التالفة، وهذه الآمال يمكن تحقيقها لأنّ الخلايا الجذعية الجنينية من الخلايا غير متخصصة من نسج معيّن، فبإمكانها أن تتحوّل إلى أيّ نوع من أنواع الخلايا، وبعض الناس يدّعون أنّ هذا الاكتشاف مجرّد الضّجيج. وبالإضافة إلى ذلك، فإنّ تدمير الأجنّة البشريّة بعد استخراج الخلايا الجذعية قد أثارت الكثير من الجدل والمناقشات القائمة على وجهات نظر دينية و أخلاقية متباينة سواً أكان ذلك لأغراض العلاج أو البحث الطبي. وقدّمت الباحثة وجهة نظر اجتهادية في هذه القضية الطبية المستحدثة معتمدة بمبادئ الأحكام الشريعة المتمثلة في المقاصد الشريعة والقواعد الفقهية. علاوة على ذلك، قامت الباحثة أيضًا بدراسة ميدانية وذلك من خلال استقراء حالات العلاج بالعلاج الخلايا الجنينية واستطلاع البحوث في ماليزيا لمعرفة مدى التقدّم المحرّز في تطبيقها. ورغم أنّ تنفيذ استخدام الخلايا الجذعية الجنينية قد تمّت الموافقة عليه بشكل عام من قبل مجلس الإفتاء الوطني في ماليزيا إلاّ أنّ البحث قد توصلّ إلى أنّ القضية ما زالت قابلةً للنّقاش في المسألة المتعلّقة بحرمة الإنسان. بناء على ذلك ، فإن الباحثة تقترح حلًّا أكثر احتياطًا وهذا الحلّ يحمل وجهة نظر مخالف عن رأي مجلس الإفتاء الوطني بماليزيا. وأخيرًا، أدرجت الباحثة بعض التوصيات فيما يتعلق بهذه المسألة.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it confirms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Islamic Revealed Knowledge and Heritage (Fiqh and Uṣūl al-Fiqh)

……..
Anke Iman Sandra Bouzenita
Supervisor

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Master of Islamic Revealed Knowledge and Heritage (Fiqh and Uṣūl al-Fiqh).

……
Sayed Sikandar
Examiner

This dissertation was submitted to the Department of Fiqh and Uṣūl al-Fiqh and is accepted as a fulfilment of the requirements for the degree of Master of Islamic Revealed Knowledge and Heritage (Fiqh and Uṣūl al-Fiqh).

……..
Ahmad Basri Ibrahim
Head,
Department of Fiqh and Uṣūl al-Fiqh

This dissertation was submitted to the Kulliyyah of Islamic Revealed Knowledge and Human Sciences and is accepted as a fulfilment of the requirements for the degree of Master of Islamic Revealed Knowledge and Heritage (Fiqh and Uṣūl al- Fiqh).

……..
Badri Najib bin Zubir
Dean,
Kulliyyah of Islamic Revealed Knowledge and Human Sciences

DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

Zizi Azlinda binti Mohd Yusof

Signature …… Date ……..

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HUMAN EMBRYONIC STEM CELLS (H-ESCs) FOR THERAPY AND RESEARCH PURPOSES:
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This dissertation is dedicated to

Islam
My Husband, Abu Bakr bin Mohd Sidek,
My Kids, Abdullah Mujahid and Asma' Al-Khansa'.

ACKNOWLEDGEMENTS

Praise to Allah, The Most Gracious and Most Merciful for His blessing and mercy that He has given. *Ṣalawāt* and *salām* upon Prophet Muhammad (s.a.w) whose life was fully dedicated to Islam in holding up the foundation of Islam so human beings would be guided towards the path of Islam with loyalty and steadfastness. While I am alone responsible for this thesis entitled "Human Embryonic Stem Cells (h-ESCs) for Therapy and Research Purposes: A *fiqhī* analytical study", it would actually not be completed without the assistance of the following people either directly or indirectly, to whom I feel deeply indebted and wish to thank. First and foremost, my appreciation is reserved to all my respected and knowledgeable lecturers at Kuliyyah of Islamic Revealed Knowledge and Human Sciences especially to my supervisor, Assistant Prof. Dr. Anke Iman Sandra Bouzenita who has always from the very beginning motivated me to complete this mission with her efforts and determination in providing solutions in difficult, my co-supervisor Assistant Prof. Dr. Tariqurrahman who has biomedical science background and always critically corrected me in doing this study especially when the discussion directly expounded on stem cell facts, Assoc. Prof. Dr. Sayed Sikandar, Assoc. Prof. Dr. Abul Laith Khair al-Abadi, Assoc. Prof. Dr. Tahir Mesawi and others who are not mentioned here for their teaching and guidance during my studies at International Islamic University Malaysia. My heartfelt gratitude to my beloved husband, Abu Bakr bin Hj Mohd Sidek for not only his understanding of my intention to complete these studies but also for always giving me a great moral support without failure. For my beloved kids, Abdullah Mujahid and Asma' Al-Khansa', ummi would like to express here that your existence in this world really blows me a great motivation in undertaking ummi's thesis. My appreciation also goes to both of my parents, Mohd Yusof bin Mat and Wan Maznah bt Wan Yaacob, my beloved siblings, Zeana Aima, Zaimislawayu, Mohd Shahlan and Zaira Marlia, my parents in-law, Hj Mohd Sidek bin Abdul Latif and Hjh Zawiah bt Hj Kasim. My sincere gratitude also goes to those who assisted me especially Encik Shahruddin Shafri as Head of Librarian Division of University Kebangsaan Malaysia, Syarifah Alawiyah bt Ahmad, Syahida bt Zainudin for providing me some stem cell materials and also Ustazah Maryam for proofreading of this thesis. Last but not least, my gratitude goes to all my beloved *sahibah*s and friends for their help and encouragement or moral support. Thank you very much and may Allah bless you all. Amin.

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TRANSLITERATION

Table of the system of transliteration of Arabic words and names used by the International Islamic University Malaysia.

b	=	ب	z	=	ز	f	=	ف
t	=	ت	s	=	س	q	=	ق
th	=	ث	sh	=	ش	k	=	ك
j	=	ج	ṣ	=	ص	l	=	ل
ḥ	=	ح	ḍ	=	ض	m	=	م
kh	=	خ	ṭ	=	ط	n	=	ن
d	=	د	ẓ	=	ظ	h	=	ه
dh	=	ذ	‘	=	ع	w	=	و
r	=	ر	gh	=	غ	y	=	ي

Short: a = ◌َ ; i = ◌ِ ; u = ◌ُ

Long: ā = ا ; ī = ي ; ū = و

Diphthong: ay = اي ; aw = او

_____

/fs J

CHAPTER ONE

INTRODUCTION OF HUMAN EMBRYONIC STEM CELLS (H-ESCs)

1.1 INTRODUCTION

Achievements in biomedical research in the last two centuries are translated into better understanding of prevention, diagnosis, and treatment of human diseases. Nonetheless, mankind is suffering from emerging fatal illnesses such as ischemic heart disease, AIDS, various forms of cancer, and neurodegenerative diseases of the nervous system like Parkinson and Alzheimer. Furthermore, the emergence of new forms and diseases and the recurrent epidemic of age old diseases such as Ebola have created additional concerns among health professionals and researchers. The discovery of stem cells and its potential use to prevent, control and treat different forms of diseases thus opens a new avenue to escape the plight. In principle, healthy stem cells can be used to replace the diseased part (tissue/organ) or the faulty genes carried by the sick. Stem cells can also be used for non-clinical reasons such as change of a physical trait or phenotype of an individual.Stem cells can be isolated from different stages of growth and development beginning from the embryonic stage to adulthood. Potential use of stem cells depends on its developmental and/or differentiation stages as well. The least differentiated stem cell has the more potential to be manipulated for therapeutic purposes. Thus, stem cells at the embryonic stage have a greater potential to be applied in various therapeutic purposes.

Successful isolation and subsequent propagation of one embryonic stem cell

may require loss of numerous embryonic stem cells. The concern over the destruction of human embryos has caused a controversy. The other major concern is whether this could be considered as 'killing of life' since the embryonic stages which can be regarded as the beginning of life is not well defined. Notably, the term embryo refers to a series of developmental stages which may consist of few cells as in morula or consist of few hundred cells as in blastula and onward stages. Needless to say, whether or not stem cell can be used for a specific therapeutic reason would require a great deal of future researches on stem cells. The use of stem cells in either or not for clinical applications and/or in other related researches would also require a critical evaluation from the perspective of Islamic jurisprudence. This study therefore aims to present a *fiqhī* (Islamic jurisprudence) point of view to these issues where stem cells from human embryos are used in therapy and research purposes especially to cure serious diseases. The researcher of this thesis will hereby explain how Islamic jurisprudence views this contemporary issue that has noble intentions in curing human critical diseases but at the same time, causes death. Since it touches on human life, the use of stem cells in curing diseases has also sparked some controversies relating to moral and religious perspectives. Islam has its *ijtihād* in this modern medical issue by adopting Islamic ruling principles as will be described later.

1.2 STATEMENT OF THE PROBLEM

The major issue in this research, which is being debated among religious scholars and scientists, is that of human embryonic stem cells (h-ESCs) which are taken from the inner cell mass of an early stage embryo at a blastocyst stage, fifth to seventh days post fertilizationate which time they consist of 50-150 cells. Human embryonic stem

cells are pluripotent in that they have the capacity to give rise to almost all types of tissue and H-ESC can be obtained through some method as elaborated later. The question that arises regarding this matter according to the sharīʿah is whether it is acceptable to destroy an embryo for the sake of therapy and research, even if this therapy can potentially cure many diseases because harvesting the cells deliberately requires the destruction of human embryos. To answer this controversial question, we must clarify when life starts according to Islamic teachings.

1.3 JUSTIFICATION OF THE PROBLEM

Researches on h-ESCs promise advances in diagnosis, treatment and prevention of a number of incurable diseases. On the basis, this study reflects on the application of *sharīʿah* important tools with the main focus on Islamic Legal Maxims (*Qawāʿid Fiqhiyyah*) and objective of Sharīʿah (*Maqāṣid al-Sharīʿah*) in determining whether the use of h-ESCs in curing serious diseases is allowed in Islam or not.

1.4 RESEARCH QUESTIONS

This study will attempt to answer some questions which arise from this controversial issue.

1. What are the main features and prospects of h-ESCs for therapy and research?
2. How can the Islamic legal rule on medical treatment be applied to h-ESCs for therapy and research?
3. How does the status of the embryo under Islamic law relate to h-ESCs

for therapy and research?

4. What is the role of *Maqāṣid al-Sharīʿah* and *Qawāʿid Fiqhiyyah* with regard to h-ESCs for therapy and research?
5. How is the implementation of h-ESCs for therapy and research with Malaysia as a case study?

1.5 OBJECTIVES OF THE STUDY

1. To explain the current trends and prospects of h-ESCs for therapy and research.
2. To elaborate how the Islamic legal rules on medical treatment can be applied to h-ESCs for therapy and research.
3. To articulate the status of the embryo under Islamic law in relation to h-ESCs for therapy and research.
4. To analyze the role of *Maqāṣid al-Sharīʿah* and *Qawāʿid Fiqhiyyah* by relating *sharīʿah* important tools to h-ESCs for therapy and research.
6. To discuss the application h-ESCs for therapy and research with Malaysia as a case study.

1.6 LITERATURE REVIEW

The use of h-ESCs is harvested at developing phase of biomedical research. It receives both favorable and opposing responses from all sectors of the society such as from religious scholars, medical doctors, scientists, political leaders and bioethical researchers. The issue has been debated from ethical, religious and social perspective without any conclusive guidelines. Furthermore, few h-ESC books which contain *fiqhī* analysis are available for references. Therefore, it is deemed appropriates for the researcher of this thesis to make an effort to analyze h-ESC from *fiqhī* point of view. The relevant literature may be categorized as follows:-

1.6.1 General References

Since all books mentioned below are general references, they do not forward any Islamic *Fiqhī* perspective.

The book written by Christopher Thomas Scott (2006) entitled '***Stem Cell Now, A Brief Introduction to the Coming Medical Revolution***' emphasizes on the stem cell and all its processes, such as its types, the enquiries or doubts that are being raised by people, and also the religious approach to the topic. It is stated in this book that the latest advances in stem cell research have potential to cure cancer, grow new organs, and repair the immune system. Through my own reading, this book is about a presentation of stem cells starting with 'description of cell' to the 'description on South Korean affairs which addresses some of the stem cell researches done at Seoul National University, led by Professor Hwang Woo Suk'. The book presents how people have found the human embryonic stem cell in their history. The author

discusses the process of removing h-ESCs from moral point of view. It is very controversial to those involved and it summarizes that donating the h-ESCs for the researches is against ethical considerations. However, this book does not express directly on Islamic and *Fiqhī* study as emphasized by the researcher. For Muslims, therefore there is a need to explore more about the legal ruling (*ḥukm*) regarding the process of removing human embryonic stem cells before approving its implementation.

Another book that deals with the process of stem cell research is a book entitled ***'Tissue Engineering, Stem Cell and Gene therapies'*** edited by Y. Murat Elcin (2002). It elaborates some advances in experimental medicine and biology. It offers perspectives on the current status and potential future of tissue engineering and stem cell technologies. The author divides the book into four parts. The part that specifically deals with the issue of stem cells is Part One Two. Interestingly, in Part One, the author discusses a research about the human Embryonic Stem Cell (h-ESC) from ethical perspective that has been conducted. From the research, says that various religions accept the h-ESC research, for instance Islam, the Protestant and Jewish. Some of the religions however firmly prohibit it, such as Catholic, Orthodox and Buddhist faiths but no references are given for these views. Thus, it is very beneficial to critically examine the causes for which Islam, compared to other religions does not prohibit such action. In part two, the author describes stem cells further, describing types and features of stem cell, the promises of stem cell research, and also some regulatory issues in stem cell research. The clarifications of the topic are definitely very helpful in comprehending the real issue of h-ESCs and its controversy.

A book entitled ***'The Human Embryonic Stem Cell Debate: Science, ethics and public policy'*** edited by Suzanne Holland, Karen Lebacqza and Laurie Zoloth

(2001) is a book which comprises several perspectives such as science, ethics as well as public policy. This compilation offers the foundation for thinking about many issues involved in human embryonic stem cell research. It also talks about the nature of human life, the limits of intervention into human cells and tissues, besides considering some broader questions in terms of who should approve controversial research without neglecting the human dignity, respect, as well as justice. Besides that, this book contains a thorough research and review by experts in this field like Geron Ethics Advisory Board (GEAB) and National Bioethics Advisory Commission (NBAC). In the introduction, the authors devote a space which touches the basic and important question such as what are heS and heG cells and why they are so important; and *'Why is h-ESC Research controversial?'*

This systematic discussion generates four parts. Part One discusses three essays by looking at scientific issue and industrial goals towards health and healing. Part Two offers an introduction to ethical issues in h-ESC research by suggesting modes of analysis that are important in the field of ethics through philosophical reasoning, historical comparison and feminist analysis. Part Three talks about angles of vision, both on ethics and modes of analysis. Lastly, in Part Four, there are some questions that are uncovered by the authors.

Another useful book is entitled ***'Research Ethics'*** edited by Ana Smith Iltis (2006). The book is a compilation of articles by several authors. Ana Smith herself is an author of the first topic, *Human Subjects research: ethics and compliance*. The main title actually tells us about the discussion itself. The most interesting topic is written by Gerald Magill, *Embryonic Stem Cell research and human therapeutic cloning: maintaining the ethical tension between respect and research*. Every chapter of this book touches the ethical research. It also introduces the principal ideas in

human research and the relationship between the ethics and compliance. Chapter Four offers an issue of embryonic stem cell and human therapeutic cloning: maintaining the ethical tension between respect and research, written by Gerald Magill. This book is very useful to this thesis as it highlights how the stem cell discourse has emerged and discusses the ethics and public policy debate on embryonic stem cell as it sparks a storm of controversy.

Next, ***'The Human Embryo Research Debates Bioethics in the Vortex of Controversy'*** written by Ronald M. Green (2001). The author systematically discusses the topic, beginning his book with an introduction to the vortex, determining moral status, the issue of research embryos and the politics intruding the cloning controversy and the stem cell debate. The author also has a useful section in the book which is the notes compiling all the researches and observations on every chapter that have been done. Besides that, the book also has appendixes with complete understanding of the stages of embryonic development, obtained from Ronan O'Rahilly and Fabiola Muller, Human Embryology and Teratology and also another appendix elaborated by the national institutes of Health Human Embryo Research Panel: Categories of Research. This book is really useful for this research because it directly touches the stem cell discourse and its moral determination.

1.6.2 Islamic Contributions

A book written by Abul Fadl Mohsin Ebrahim (2005) entitled *'Biomedical Issues Islamic Perspective'* which articulates the issues or problems that people, especially Muslims, face in this life, such as Islam and health, reproductive control, biotechnical parenting and abortion. In view of these topics, the research on h-ESC is related to the chapter of abortion which presents to us the termination of life, the status of the fetus

and punishment for feticide. This status of the fetus informs us about the stages of development in human life. This chapter describes a basic knowledge of *sharīʿah* that has been discussed by Muslim scholars. For instance, what is abortion? And is it permissible in Islam? If yes, when and why? And also if no, why is it prohibited? The status of the fetus has also been presented in it. The author explains the fetus from scientific analysis, Quranic analysis as well as ḥadīth analysis. Though the author does not specifically touch the issue of human embryonic stem cell, the facts given are very useful to the researcher in accessing the issue of removing human embryonic stem cells, from the Islamic perspective.

Another book is the one entitled ***'Islamic Bioethics Problems and Perspectives'*** written by Danish Atighetchi (2007), and published by Springer Online Books. This book covers the bioethical matters beginning with a basic discussion on the Muslim sources. This basic discussion is very important to be exposed in order to be referred to whenever new events emerge which may demand Islamic jurisprudence. The book also tells us about the features of Islamic Bioethics which contain the values of different positions and also enlighten some Muslim countries with their efforts on medical bioethical matters which stress on the *maṣlaḥah* of the Muslim community. The author explicates about abortion and how Islam views abortion before ensoulment and after ensoulment with Quranic verses and Hadith justifications. This chapter will help to discover the basic point of abortion. The most influential part of this book is a chapter which discusses Islamic legal views on genetics. Many contemporary issues have attracted Islamic point of views such as human cloning, organ transplantation, research on stem cells, the abortion of handicapped fetuses, consanguineous marriage and many other things. It also compiles the *fatwās* from varieties of countries on the *ḥukm* of using human embryonic stem cells as a way to save mankind, including when