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Article

Legality extent of therapeutic cloning in Islamic Fiqh and comparative laws—A comparative analytical study

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Abstract: The rapid advancement of biotechnologies involves human subjects that brings forth intricate ethical, legal, social, and religious challenges. Recent breakthroughs in cloning and stem cell research have generated new hopes as well as presents considerable promise for treating severe diseases and regenerative medicine. In this regard, for advancements in biotechnology to be clinically applicable in medicine, it's essential to comprehend both scientific principles and ethical implications, taken into consideration the scientific roadblocks impeding advancement in therapeutic cloning such as tumorigenicity, epigenetic reprogramming and interspecies pathogen transfer. As research in this area progresses, it will clarify that stem cells can be obtained from various sources, including therapeutic cloning, which involves cloning embryos from the nuclei of somatic cells or cloning individual organs in the laboratory. This article studies the legitimacy extent of therapeutic cloning in Islamic Fiqh and comparative law, using the comparative analytical approach. Thus, we have reached a number of results, the most important of which is that the Islamic Fiqh perspective on the illegality of extracting stem cells by creating therapeutic embryos using Somatic Cell Nuclear Transfer (SCNT). It is deemed unacceptable to create an embryo for the purpose of its development and then destroying it for the purpose of stem cells, as this is unacceptable that turns the human being into a source for spare parts. Conversely, cloning specific organs and tissues in the laboratory for medical purposes is considered permissible, provided that it does not harm anyone or violate their sanctity that is consistent with many comparative laws.

Keywords: cloning; Islamic Fiqh; stem cell; Somatic Cell Nuclear Transferm; SCNT; human organs

1. Introduction

The swift evolution of biotechnologies involving human subjects brings forth intricate ethical, legal, social, and religious dilemmas. Recent breakthroughs in cloning and stem cell research have sparked new hopes for treating severe diseases as well as presents considerable promise for treating severe diseases and regenerative medicine, yet they also raise numerous complex questions. Central to the debate is the moral status of the human embryo. Due to the unavoidable consequences of reproductive cloning, it is prohibited in Islam (Al-Aqeel, 2009).

Stem cell research papers constitute a medical revolution, because of the uniqueness of these cells -from other types of human body cells- with the characteristics of non-specialization, the ability to divide, self-renew and the ability to differentiate the production of specialized cells (Larijani, 2004), which made doctors and patients -alike- pin hopes on them for the treatment of diseases.

With the progresses and develops of research papers in this area, there are many sources from which stem cells can be obtained, perhaps the most important of which

are placenta and umbilical cords, from children's and adults' somatic or physical cells, surplus inoculants of IVF projects, embryos falling at any stage of pregnancy, and from the therapeutic cloning method known as somatic cell nucleus transfer (SCNT); which is one of the most controversial sources of stem cell extraction as of the many legal, moral and even medical caveats surrounding this technology.

The topic of the ontological and moral status of the human (preimplantation) embryo is one that is extensively discussed in the field of therapeutic cloning by nature (Larijani, 2004).

The United Nations therefore announced the prohibition of all forms of human cloning and further called Member States to take the necessary measures to prohibit the application of genetic engineering techniques that may be incompatible with human dignity and the protection of human life, by United Nations General Assembly resolution 59/280 dated on 8 March 2005, and WHO's consideration of human cloning in 1997 confirmed that "The use of human cloning is unacceptable and contrary to human physical, spiritual integrity and moral principles. The Arab Convention for the Prevention and Control of Human Cloning is approved by the Arab Councils of Ministers of the Interior and Justice at their joint meeting that was held in Tunis on 4 March 2019".

The article aims to know the Islamic Fiqh perspective regarding therapeutic cloning as it is a new topic so, it is regular that the older scholars' writings do not include a direct judgment statement in this regard, but it has received great attention from Contemporary Islamic Fiqh such as Islamic Fiqh Academy and Egypt's Dar Al-Ifta to demonstrate its legitimate judgment, in addition to presenting legitimacy extent of the subject in comparative laws.

To achieve these objectives, the article relied on the comparative analytical approach that was divided into three main parts: 1) Therapeutic Cloning; Definition. 2) Therapeutic reproduction of human embryos and the perspective of Islamic Fiqh thereof. 3) Therapeutic cloning of human organs.

2. Therapeutic cloning; definition and types

2.1. Reproductive cloning definition

The term "clone" is relatively modern, introduced in 1903 by the American plant scientist Herbert J. Webber. He used it to describe plants produced through asexual (vegetative) reproduction (Rogers, 2015).

On 27 February 1997, the announcement was made in Scotland about the birth of Dolly, a cloned sheep from an adult lamb (McKinnell, 1999).

In biology, cloning refers to the asexual reproduction of organisms. Unlike sexual reproduction, where offspring inherit a mix of traits from both parents, cloning produces progeny that are exact genetic replicas of the original organism. These clones can be created in vitro through two primary methods: somatic cell nuclear transfer (SCNT) and embryo splitting, that also known as twinning (Rahbaran, 2021).

Prohibition of reproductive human cloning in Islamic Fiqh

Islamic Fiqh is unanimous on the prohibition of reproductive human cloning; because it is of the genus of changing God's forbidden creation, and this is what the

Council of the International Islamic Fiqh Academy of the Organization of Islamic Cooperation decided at its tenth conference which held in Jeddah, Saudi Arabia, in July 1997 AD; After cloning was defined as the generation of one or more living organisms, either by transferring the nucleus from a body cell to a nucleus-free ovum, or by splitting a fertilized ovum at a stage that precedes the differentiation of tissues and organs, a resolution has been issued to prohibit human cloning in both ways mentioned or in any other way that leads to human reproduction (International Islamic Fiqh Academy, 1997), as the Egyptian Dar Al-Ifta (an Egyptian Islamic advisory, justiciary and governmental body) supported this resolution (Egypt's Dar Al-Ifta, 2017).

2.2. Definition of therapeutic cloning

The discovery of the possibility of using therapeutic cloning technology for the use and transplantation of embryonic stem cells in potential medical and therapeutic applications and uses has sparked a great debate in the scientific, religious and ethical communities and this controversy is further exacerbated by the legislative vacuum that still surrounds it (Belhaj, 2003).

Therapeutic cloning here does not mean reproductive cloning, which is known as: "Generating one or more living organisms either by transferring the nucleus from a somatic cell to a nucleated ovum, or by splitting a fertilized ovum at a stage prior to the differentiation of tissues and organs" (International Islamic Fiqh Academy, 1997), but rather the process that aims to employ cloning as a therapeutic method by cloning embryos from somatic cell nuclei or by cloning individual organs in the laboratory or by cloning intact genes to compensate for defects with the intention of treating some intractable genetic diseases.

The techniques used in therapeutic cloning, also known as research cloning, are identical to those used in reproductive cloning, especially somatic cell nuclear transfer (SCNT). However, in therapeutic cloning, the resulting pre-embryo is not implanted into the uterus. Instead, these pre-embryos are used to isolate Embryonic Stem Cells (ESCs) after 4–5 days of formation. These ESCs are then utilized to generate tissues and organs for transplantation. The primary objective of therapeutic cloning is the in vitro regeneration of tissues and organs (Rahbaran, 2021).

Therapeutic cloning according to this concept has two forms: "human embryo cloning and human organ cloning". As reaching the perspective of Islamic Fiqh on therapeutic cloning requires a statement of the distinction between the two aforementioned forms of therapeutic cloning (cloning of human embryos and cloning of human organs), in the following detail.

3. Therapeutic cloning of human embryos and Islamic Fiqh perspective towards it

3.1. Definition of Somatic Cell Nuclear Transfer (SCNT)

In Somatic Cell Nuclear Transfer (SCNT), also known as adult DNA cloning, as a method for cloning entire organisms, the nucleus of an oocyte is removed and replaced with the nuclear genetic material from a somatic cell. Once the new oocyte

is fertilized, the resulting pre-embryo is implanted into a host uterus, where it can develop into a complete organism.

The first stage of Somatic Cell Nuclear Transfer (SCNT), called nucleation. It involves removing the haploid chromosomes (n- autosomes) containing the meiotic spindle complex from an oocyte in metaphase secon. After nucleation, diploid somatic cells (2n) from a suitable donor are transferred and fused into the enucleated oocyte. The resulting cell, known as a cytoplast, is then artificially activated using electric pulses or chemical stimulation to promote embryo development. This method was famously used to create Dolly sheep and other cloned organisms. Additionally, SCNT has been successfully applied to clone various species, including cattle, mice, sheep, pigs, rabbits, and rhesus monkeys, for generating embryonic stem cells (ESCs) and live offspring for both reproductive and therapeutic cloning. For the past 20 years, SCNT has been utilized in stem cell research and regenerative medicine (Rahbaran, 2021).

The new oocyte cell (formed after the integration of the nucleus with the ovum) is characterized by being fully capable of forming a whole organism, and therefore it is considered a fully effective Totipotent cell, which leads to its division, and through the process of flaring it turns into the blastula stage and thus can be a source of pluripotent cell lines, which are the source of embryonic stem cells.

In vitro, embryonic stem cells (ESCs) can proliferate indefinitely and are pluripotent, meaning they can differentiate into any cell type in the body. In contrast, adult stem cells are multipotent, meaning they are limited to producing cell types within a specific lineage (Kfoury, 2007).

The embryonic stem cells produced through therapeutic cloning are also characterized by a relatively low incidence of immune rejection, as they are genetically identical to the individual from whom the nucleus was taken and implanted in the ovum, solving the problem of tissue rejection by the immune system. For example, when a somatic cell is taken from the patient to be treated in this way, it facilitates the reproduction of stem cells that are a source of treatment, as they are implanted back into the same patient, however, a significant drawback of this method is its ineffectiveness in treating genetic diseases. If the disease is genetic, any cells taken from the infected person and implanted will also be infected, rendering the method unsuitable for such cases (Al-Bar, 2002).

3.2. Therapeutic cloning promises

After numerous unsuccessful attempts, primate embryonic stem cells were successfully derived through somatic cell nuclear transfer (therapeutic cloning) in November 2007. Additionally, the first attempt at embryo transfer for human reproductive cloning was made in 2006, though it did not yield positive results. These milestones compel us to seriously consider the potential reality of human cloning, which now seems much closer to being achievable (Camporesi, 2008).

Therapeutic cloning holds significant promise in regenerative medicine by avoiding immune rejection and potentially curing genetic disorders when combined with gene therapy. Somatic Cell Nuclear Transfer (SCNT) in therapeutic cloning offers vast potential for research and clinical applications, including using SCNT

products for gene delivery, creating animal models of human diseases, and cell replacement therapy. It has shown promise in treating conditions like Parkinson's disease, Duchenne muscular dystrophy, and diabetes mellitus in vivo. Additionally, SCNT could enable in vitro organogenesis and combat aging in the future. The combination of therapeutic cloning and gene therapy presents great potential for patient-specific correction of loss-of-function genetic mutations, leading to restored or enhanced protein activity. Therapeutic cloning in cell replacement therapy can also generate various tissue types, such as osteoblasts, to address osteoporosis.

Scientific challenges hindering the progress of therapeutic cloning include tumorigenicity, issues with epigenetic reprogramming, mitochondrial heteroplasmy, the risk of interspecies pathogen transfer, and the limited availability of oocytes (Kfoury, 2007).

The primary goal of embryonic stem cell cloning techniques is to generate tissue that is immune to graft rejection (Pavelic, 2004).

There is concern about the potential commodification of human ovums and the establishment of a commercial market that assigns a monetary value to "potential human life" (Hall, 2006).

3.3. The Islamic Fiqh perspective on therapeutic cloning of human embryos

Islamic Fiqh is almost unanimous in prohibiting the cloning of therapeutic human embryos, and the researcher did not agree on saying that it is permissible except for the resolution of the European Council for Fatwa and Research on the ruling of cloning. These two directions are presented as follows.

3.3.1. The first opinion: The consensus of Islamic Fiqh that the cloning of human embryos is prohibited and inadmissible

The consensus of Fiqh is almost certain to state that the cloning of therapeutic human embryos is prohibited, as the cloned inoculant enjoys a dignity commensurate with its age, and a kind of life that requires respect, and that attacking it falls into the name of unlawful killing, considering the future outcome of this cloned inoculant from a full human being without the desire and ambitions that prevented it from reaching its destination. This statement is supported by a number of evidences, including:

(1) Allah says: "Verily, I will mislead them, and surely, I will arouse in them false desires; and certainly, I will order them to slit the ears of cattle, and indeed I will order them to change the nature created by Allâh". "The Holy Quran, Surat An-Nisa—Verse 119".

The significance of this noble verse is that Allah Almighty has shown that changing the attribute on which God created people is Satan's obsession and propitiation, and this indicates the prohibition of Sharia to change the attribute and creation on which God created people, and reproduction in it is a change for God's creation, as removing ovum's contents from it and intervening in the human cell is considered a change for God's creation, and this is what the noble verse warned against.

This signification was objected to in two ways.

The first aspect: The prohibited change is after finding and blowing the soul. As for changing the characteristics of the ovum inside the laboratory, it is not considered a prohibited change.

The second aspect: If it is recognized that there is a change in this process, it is a licensed change for the legally prescribed medication.

These two objections are answered that this cloned inoculant has a dignity commensurate with its age, and a kind of life that requires respect, and it is not permissible to attack it, and that if medication is legitimately ordered, it is forbidden taboo medication.

(2) The Almighty says: "We have certainly honored the children of Adam and carried them on the land and sea and provided for them of the good things and preferred them over much of what We have created, with [definite] preference". "The Holy Quran, Surat Al-Isra -Verse 70".

The significance of this verse is that therapeutic cloning is an affront to human dignity, as the manipulation of human parts to reach stem cells is a kind of human vulgarity, and this contradicts the significance of the noble verse that honors man and raises his status.

It was objected to this aspect as it is not accepted that therapeutic cloning is an affront to human dignity, as the cell is not considered human, and therefore changing its characteristics is not considered an affront to it, and that change is in the interest of man, and the search for appropriate medicines and treatments for him, it is an honor for him that is not contemptible.

To this objection, it is answered that this cloned inoculant has a dignity commensurate with its age, and a kind of life that requires respect, and it is not permissible to attack it.

(3) Taking into account the outcome of this cloned inoculant from a human organism that has its human sanctity, and that its destroying extract its stem cells prevents this result, and taking into account the fate of the origin in force that stated in Sharia, which is what the jurist Al-Sarakhsi said that the sperm in the uterus - Unless it is corrupted- is prepared for life and to be a living person, it is given the rule of life as the fate, and therefore the will to the fetus in its mother's hum is correct, as well as the fetus in its mother's womb has the right to inheritance due to its fate (Al-Sarakhsi, 1993), therefore the sperm must be treated as the same as the alife soul considering the fate.

(4) If life proves to the fetus from the first day of insemination, and that the cloned inoculant represents the first step of the cloned newborn, then this means that it is a live inoculant that prevents it from being attacked, and if it was a dead inoculant, it would not have all this interest dependent on its living embryonic stem cells, and if scientists had not intervened in the laboratory to remove the outer cell layer knowing the impossibility of implanting the inoculant without the outer cell layer in the uterus, it would have given an embryo then a newborn, as usual and most likely this is the end of every inoculant (Issa, 2014).

(5) Taking into account the Islamic Shariaa's interest in the purposes, objectives, and regulating the means and reasons for the fact that choosing the right means would fully serve the purpose and the complementarity of the interest; and the cloned inoculant and its stem cells are intended to be taken as a means through restoring a

decimated organ or enriching a new research or others, as it is a means that in fact leads to an attack on the seed of human life, and thus its ruling is prevention, although it will lead to medication and treatment that is legally desirable, as the Islamic shariaa rejects the principle of "the purpose justifies the means", so none of the means is permissible except the good and legitimate sheriff (Al-Burhani, 1985).

(6) In opening the way for therapeutic cloning is an excuse that may lead to human cloning for the sake of reproduction, as the prohibition of this is to block the pretexts recognized by scholars.

In all, the technique of reproductive cloning, even if it is not for the humans' production, is rejected and prohibited. This method that intended for the therapeutic cloning of embryo may not be used to find stem cells, even if it is for the treatment of serious diseases, and there are multiple means that can be resorted to, as it is not possible to accept the creation of a nuclant from a donor for the purpose of their development and then kill it to obtain stem cells, it is rejected and turns a person into a source of spare parts (Al-Bar, 2002), in addition that the nuclant or the compensated ovum has a nucleus with a complete cell, as a human being in the early stages of his life, with dignity commensurate with his age and does not accept to be a means for others (Al-Salami, 1997)

In light of the above, the consensus of contemporary Muslim jurists appears on the prohibition of the extraction of stem cells by therapeutic cloning of embryos. The International Islamic Fiqh Academy of the Muslim World League issued a resolution on therapeutic cloning -which is intended to take a somatic cell from an adult human, extract its nucleus and merge it into an empty ovum from its nucleus, with the aim of reaching the blastula stage, and then obtaining stem cells from it - that this source is one of the prohibited sources from which stem cells may not be obtained, with the inadmissibility of using these cells - of a prohibited source - whether in treatment, medical experiments or preservation (the Islamic Fiqh Academy Council, 2010).

3.3.2. The second opinion: admissibility to adopt therapeutic cloning techniques provided that not destroyed an embryo that has reached forty days

With this statement, the European Council for Fatwa and Research issued a resolution on cloning ruling (The European Council for Fatwa and Research 2003), in which it considered permissible to adopt cloning techniques in the fields of medical treatment, using blastocytes "Stem Cells Cellule Souches" to form healthy organs that can replace defective ones, provided that this does not lead to the destruction of an embryo that has reached forty days. The Council's opinion was inferred as follows:

(1) The noble verses that call for ease for the worshippers:

The Almighty says: "Allah intends for you ease and does not intend for you hardship". "The Holy Quran, Surat Al-Baqarah- from verse 185".

The Almighty says: "Allah does not intend to make difficulty for you". "The Holy Quran, Surat Al-Ma 'idah from verse 6".

It is pointed out that these and other gracious verses indicated that the intention of the legitimacy is to facilitate the worshipers and not to make them difficult, and that in allowing therapeutic cloning for the extraction of stem cells, it is easy for the worshipers and mercy for the sick and the injured and to alleviate them, and this is what corresponds to the legitimacy's intention.

(2) The Holy Verses that call for excluding the necessity from the prohibition Allah says: “But whoever is forced “by necessity”, neither desiring “it” nor transgressing “its limit”, there is no sin upon him. Indeed, Allah is Forgiving and Merciful”. “The Holy Quran, Surat Al-Baqarah - verse 173”, Allah says: “But whoever is forced by severe hunger with no inclination to sin-then indeed, Allah is Forgiving and Merciful”. “The Holy Quran, Surat Al-Ma ‘idah–from Verse 3”, Allah says: “He has explained in detail to you what He has forbidden you, excepting that to which you are compelled”. “The Holy Quran, Surat Al-An ‘am–from Verse 119”, and Allah says: “But whoever is forced “by necessity”, neither desiring “it” nor transgressing “its limit”, then indeed, your Lord is Forgiving and Merciful”. “The Holy Quran, Surat Al-An ‘am-Verse 145”.

The significance of these verses is that they agreed to exclude the necessity from the prohibition stipulated in them, and the therapeutic cloning to extract stem cells within the degree of necessity or need, especially in the event that this method is designated to extract those cells.

This opinion is answered by the unavailability of the state of necessity in accordance with its legitimate concept, especially with the existence of other alternatives and means by which it can be treated.

(3) The noble verses that emphasize harnessing the universe in the service of man

The Almighty said: “Do you not see that Allah has made subject to you whatever is in the heavens and whatever is in the earth and amply bestowed upon you His favors, both apparent and unapparent? But of the people is he who disputes about Allah without knowledge or guidance or an enlightening Book “from Him””. “The Holy Quran, Surat Luqman–Verse 20”, and the Almighty said: “And He has subjected to you whatever is in the heavens and whatever is on the earth-all from Him. Indeed in that are signs for a people who give thought”. “The Holy Quran, Surat Al-Jathiya-Verse 13”.

The significance of these verses is that what is in the universe is harnessed to man and prepared for him to serve his interests and achieve his legitimate benefit, and there is no doubt that therapeutic cloning is in it to achieve many interests related to the discovery of medicines and new therapeutic methods.

It is answered that it is not within the scope of harnessing the universe to attack and destroy the seed of human life, because the cloned inoculant has a dignity commensurate with its age, and a type of life that requires respect and protection.

(4) It was narrated on Abi Hurayrah, from the Prophet, that he said: “Allah has not sent down any medicine, without has sent down a cure”. (Al-Bukhari, 2001)

It is pointed out that these two hadiths indicated the legitimacy of medication, and that therapeutic cloning is one of the most legitimate forms of medication.

It is answered that inadmissibility of medication is prohibited, and that one of the aspects of the prohibition is the attack on the cloned inoculant, which falls within the so-called unlawful killing, considering the future outcome of this cloned inoculant from a full human being.

(5) Measurement of the permissibility of pregnancy abortion in the spermatic phase.

The analogy is that it is also permissible to abort a pregnancy if it is in the sperm phase because it is not forbidden, so it is permissible to clone this sperm to extract stem cells, because it has no legal sanctity.

Discussion of this view: one of measurement conditions is that the measured asset is subject to agreement, in which this matter is debatable; as a group of scholars prevented the abortion of pregnancy in all its stages, even if it is in the spermatic phase, which is adopted by Maliki (Al-Qurtubi, 2004), which is the aspects of Shafi 'ism (Al-Ramli, 1984), which is the Hanbali school at all (Ibn Qudamah, 1968), and some Hanafis (Al-Sarakhsi, 1993).

(6) Measurement on Organ Transplantation; As it is permissible to transfer organs from one person to another when doing so, it is permissible to transfer cloned stem cells to the body of the needy.

He argues that the permissibility of organ transplantation is disputed and not unanimous so that it can be measured. Moreover, the dispute here is in finding the cloned cell, not in the transfer of the stem cells it contains.

Therefore, in the likelihood of this issue, the first opinion is supported in saying that obtaining stem cells through therapeutic cloning of human embryos is prohibited and impermissible, regardless of the embryo's age and whatever the stage it passes through, whether before or after forty days. It is not possible to accept finding an inoculant for the purpose of developing it and then killing it after that to obtain stem cells. It is unacceptable and turns a person into a source of spare parts, because the cloned inoculant has dignity commensurate with its age, and a type of life that requires respect, especially with other sources through which stem cells of different types and abilities can be extracted.

3.4. Legality of therapeutic cloning in comparative law

Before presenting the perspective of international legislation on scientific research and medical experiments on stem cells resulting from therapeutic cloning. The resolution of the United Nations is presented in which officially declared the prohibition of all forms of human cloning, while also calling on Member States to take the necessary measures to prohibit the application of genetic engineering techniques that may be contrary to human dignity and the protection of human life (United Nations General Assembly, 2005), as well as the World Health Organization, which first considered the subject of human cloning in 1997, and stressed that "the resort to that cloning human individuals is unacceptable and contradicts with human physical, spiritual safety and ethical principles. In the year that followed, the Fifty-first World Health Assembly reaffirmed that "cloning for the purposes of cloning individuals is morally unacceptable and contrary to human dignity and peace" (World Health Organization, 2005).

3.4.1. Views on current legislation in European countries

While European countries unanimously agree on prohibiting reproductive cloning, there is no consensus on whether research into therapeutic cloning should be allowed. Since the UK led the way by voting in favor of regulations permitting therapeutic cloning, public debate on the matter has intensified across the Continent (Nippert, 2002).

The European Parliament maintains a relatively conservative stance on therapeutic cloning, though this position is advisory rather than legislative. The European Union (EU) does not fund projects involving nuclear transfer (NT). Currently, EU countries have their own policies, which may either allow or prohibit researchers from performing human NT for medical research. However, all EU member states have signed the Charter for Fundamental Rights, which bans reproductive NT. In contrast to the European Parliament, the European Commission seems more open to human NT (HNT) and has recently called for a debate to address the ethical and medical aspects of the practice.

The outcomes of this debate could solidify or confirm views on such research. Currently, four of the twenty EU member states—Sweden, Belgium, Finland, and the U.K.—have enacted legislation permitting human cloning for therapeutic purposes, albeit with certain restrictions. Additionally, the Oviedo Convention (1997) and the Protocol on Cloning (1998) have been signed by several member and non-member states of the Council of Europe.

Specifically, Article 18 of the Oviedo Convention states: "(1) Where the law allows research on embryos in vitro, it shall ensure adequate protection of the embryo. (2) The creation of human embryos for research purposes is prohibited." Additionally, Article 1 of the Protocol on Cloning states: "(1) Any intervention seeking to create a human being genetically identical to another human being, whether living or dead, is prohibited." Some countries, like France and Germany, strongly oppose human somatic cell nuclear transfer (NT) and have proposed a worldwide ban to the United Nations, set to take effect in September 2006. The ambiguity of the Oviedo Convention is evident, as signatory countries such as France and Sweden have very different legislation on HNT, while non-signatory countries like Germany remain opposed to any form of HNT (Hall, 2006).

Since both reproductive and therapeutic cloning involve the in vitro creation of a human embryo, banning reproductive cloning could significantly impede medically important research based on therapeutic cloning. France and Germany proposed a worldwide ban on reproductive human cloning to the UN in 2001, which has been in effect since September 2006 (Kfoury, 2007).

3.4.2. Legislative perspective of the United States of America on therapeutic cloning

It is found that there is no federal law prohibiting human cloning, although some states have adopted local laws prohibiting human cloning, such as California, Michigan and Louisiana, where about eight states have issued laws prohibiting reproductive human cloning, and there are about five states prohibit human cloning of all kinds, i.e. reproductive and therapeutic.

3.4.3. Legislative position of Arab countries on therapeutic cloning

The General Secretariat of the League of Arab States in Tunisia issued the Arab Agreement to Prevent and Combat Human Cloning, which was approved by the Councils of Arab Ministers of Interior and Justice at their joint meeting held in Tunis on 4 March 2019 (The General Secretariat of the League of Arab States, 2019), which aims, in accordance with Article (2) thereof, to prevent, combat and detect human

cloning in all its forms and types, and all other crimes related to it and prosecute its perpetrators, and to promote Arab cooperation in this field.

The first article presented a number of prohibited forms of cloning, as it defined nuclear transfer as: "The process of transferring a nucleus from an adult body cell to a unnucleated ovum and fusing them to multiply the resulting cell with the intention of forming a living human being." It also defined as the transfer of DNA to sexual cells as: "The introduction of nuclear material into the sexual cell from which the nuclear material was removed or its activity was stopped".

Article 5 stipulated that "Each country Party undertakes the necessary legislative measures to prevent: 1) The conduct of human cloning, 2) Carrying out the transfer of DNA of the body cell with the intention of generating a living human organism at any stage of physical development to make it genetically identical to another human organism, 3) Human cloning for reproductive, research or experimental purposes. And 4) Reproduction of organs or tissues or their parts leading to the mixing of genealogies".

The Arab countries have continued to take measures to approve the agreement, as the Kingdom of Saudi Arabia approved the Arab Convention for the Prevention and Combating of Human Cloning by Royal Decree No. (M/128) dated 28 January 2024 (Saudi Royal Decree No. M/128, 2024).

In Egypt, in the absence of a law on the provisions of stem cells regulating the provisions of each source, such as therapeutic cloning, referring to the Regulation of Medical Ethics issued by the Minister of Health and Population No. 238 of 2003 on 5 September 2003, it is found that it has prohibited physicians from conducting medical research aimed at human cloning or participating in it, and imposed on them adherence to ethical standards and controls, social and religious values in a number of its articles as follows:

Article (9) of the regulation stipulates that: "A doctor may not apply a new method of diagnosis or treatment if its testing has not been completed in a sound scientific and ethical manner and published in approved medical journals, its validity has been proven and it has been licensed by the competent health authorities. It is also not permissible for him to unjustly attribute to himself any scientific discovery or alleged unilateralism thereof".

Article (52) of it stipulates that: "The doctor is obligated to consider the implementation of all ethical standards and controls, social and religious values set by the competent authorities to conduct medical research on human beings".

Article (60) of the regulation stipulates that: "It is prohibited for the researcher to conduct researches and practices that involve suspicion of mixing genealogies or participating in them in any way, and it is also prohibited for him to conduct medical research aimed at cloning the human organism or participating in it".

Thus, it can be said that the regulation of medical ethics has prohibited all forms of human cloning - including therapeutic cloning - but these regulatory texts do not dispense with the need to pass legislation - not to prevent human cloning in all its forms, including the cloning of therapeutic embryos - but to criminalize it and impose deterrent penalties on it, as this is an affront to human dignity and degradation, especially in the presence of the availability of other and multiple ways through which embryonic stem cells can be obtained.

4. Therapeutic cloning of human organs

4.1. Definition and importance of therapeutic cloning of human organs

The first form of therapeutic cloning is human organs' therapeutic cloning, which is intended to clone some of the organs that a person needs in his life in the event of damage to one of these organs (Al-Jundi, 1994). Human organs are cloned in the laboratory by taking the cells of the organ in need and trying to multiply them or clone them in the laboratory with the intention of facilitating the treatment process that requires the transplantation of a damaged organ, without resorting to cloning an embryo that is destroyed at the earliest stage to benefit from its stem cells in the restoration or replacement of the decaying organs.

This type exists at the laboratory level, which is called Tissue Engineering. Its idea based on some vital components of thin types of plastics or polymers can become a suitable medium for the growth of different body tissue cells on them, while providing the appropriate climate and food for them, such as in the uterus of the mother or in the case of ectopic fertilization or tissue cultures of different viruses.

4.2. The purpose of organic therapeutic human cloning

The purpose of organic therapeutic human cloning is to provide banks of cloned human organs with the intention of avoiding deaths resulting from the absence or shortage of organs needed for transplantation or their delay beyond the time of need (Youssef, 2014).

Scientists in laboratories have achieved success in cloning and transplanting human skin, and there are banks for this skin in many countries of the world, which is one of the important organs on which saving a person whose body has been exposed to a large percentage of burns, as well as cloning cartilage and blood vessels (Al-Jundi, 1994), and they have succeeded in developing parts of the human hand and developing the ear and nose, and research is still continuing in this field in order to clone the rest of the human organs, and there is no doubt that it is useful to be able to obtain implants of cellular strains suitable for the manufacture of a liver or heart (Arabic Encyclopedia, 2000).

However, on the other hand, some exclude the occurrence of cloning of human organs, because the process of organ formation within the embryo is subject to genetic factors responsible for the formation of these organs as long as they are within the embryo. By studying embryology, each doctor knows how many multiple stages follow in succession and a tight system to eventually reach the organism with its organs, and that any error, even if small, leads to congenital malformations. On this basis, if the nucleus of the hepatocyte is implanted in an empty ovum, it will produce a complete clone - that is, an embryo - and not only a liver. If the cell is implanted in the center of the laboratory, it produces a clone consisting of one type of hepatocytes (Manclonal cells) and not a liver with all its different descriptions, shapes and functions and measured by all organs (Al-Shazly, 1997).

4.3. The perspective of Islamic Fiqh on therapeutic cloning of human organs

The use of cloning technology in the creation of an organ does not raise a dispute among the Islamic Fiqh proponents (Khalifa, 2004), and that the consideration of cloning of human organs is legitimate, provided that there is no harm and the correct legitimate permission is obtained.

On the other hand, the cloning of human organs will achieve one of the goals of Islamic Fiqh, which is self-preservation, by eliminating the problem of patient's waiting for a long period of time until there is a donor, and overcoming the problem of the body's rejection of the transplanted organ, as well as not raising legal problems of interest from the medical intervention, as the owner of the organ will be the patient for himself (Khalifa, 2004).

In this regard, the International Islamic Fiqh Academy of the Organization of Islamic Cooperation (OIC) issued a resolution on "the human use of the organs of another human being, whether alive or not" where it went to the permissibility of transferring the organ from one place of the human body to another place of his body, taking into account that the expected benefit from this process is more likely than the damage resulting from it, and provided that this process is done to find a missing organ or to restore its shape or function, or to repair a defect or remove a ugly that causes the person psychological or organic harm (The International Islamic Fiqh Academy, 1988).

For its part, the Egyptian Fatwa house said that cloning a part or organ of a person's organs, if it is to compensate the sick person for what he loses or to treat him from some diseases, is legitimate. Additionally, it was said that if the cloning is partial to the tissues of vital organs, such as heart tissue in the case of angina, for example, the cloned tissue cells are injected into the affected heart muscle to grow and replace the damaged ones, perform their functions and restore life to the sick heart, or the cloning of whole organs such as the heart, liver, kidney, or other vital organs with the intention of benefiting from them in treatment, all of this is permissible unless it results in harming someone, or an attack on his sanctity (Egypt's Dar Al-Ifta, 2017).

5. Conclusion

The research findings can be summarized as follows:

The illegality of extracting stem cells by therapeutic cloning of embryos using somatic cell nucleus transfer (SCNT) technology, whatever the age of that embryo and whatever the stage it passes through, whether before or after forty days, it is unacceptable to find inoculant for the purpose of its development and then kill it after that to obtain stem cells. This is unacceptable and turns a human being into a source of spare parts, because the cloned inoculant has dignity commensurate with its age, and a type of life that requires respect, especially with other sources through which stem cells of different types and abilities can be extracted.

Islamic Fiqh agrees on the legality of organic cloning, and that there is nothing to prevent the cloning of certain organs and tissues needed in a human life in a laboratory, under the conditions that: do not clone organs, tissues or parts that lead to the mixing of genetics, and do not result in harm to anyone or infringement of his inviolability. At the end of the article, we recommended that the legislator in Egypt

and the Arab countries to intervene to issue an integrated legislation regulating all provisions of stem cells, especially therapeutic cloning and prohibiting human reproductive cloning as well as the extraction of stem cells by therapeutic embryo cloning using somatic cell nucleus transfer (SCNT) or other methods.

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References

Al-Aqeel, A. I. (2009). Human cloning, stem cell research. An Islamic perspective. Saudi Medical Journal, 30(12), 1507-1514. https://smj.org.sa/content/30/12/1507/tab-article-info

Al-Bar, M. A. (2002). Stem Cells and Moral and Jurisprudential Issues. Saudi Publishing & Distribution House Co.

Al-Bukhari, M. I. (2001). Sahih Al-Bukhari (1st ed.). Dar Tawq Al-Najat, Beirut.

Al-Burhani, M. H. (1985). Sadd Al-dhari'ah. Dar Al-Fikr, Damascus.

Al-Jundi, A. R. (1994). Human cloning between boldness and refrainment. Journal of the International Islamic Fiqh Academy, 10(3), 235-269. https://ketabonline.com/ar/books/6004/read?part=10&page=21016&index=3282249/3282270/3282273

Al-Qurtubi, A. W. (2004). Bidayat Al-mujtahid Wa-Nihayat Al-muqtasad (1st ed.). Dar Al-Hadith, Cairo.

Al-Ramli, S. M. (1984). Nihayat Al-muhtaj 'iilaa Sharh Al-minhaj. Dar al-Fikr, Beirut.

Al-Salami, M. M. (1997). Human Cloning. Journal of the International Islamic Fiqh Academy, 10(3)

Al-Sarakhsi, M. A. (1993). Al-Mabsout. Dar Al-Maarifa, Beirut.

Al-Shazly, H. A. (1997). Reproduction of its truth - its types - the rule of each type in Islamic jurisprudence. journal of the Islamic Fiqh Academy, 10.

Arab Encyclopedia Authority. (2000). Arabic Encyclopedia (1st ed., Vol. 2, p. 292)

Belhaj, A. A. (2003). The legitimacy of using embryonic stem cells from a legal, ethical and humanitarian perspective. Awaei Al'iislami Journal, 448, 26-31.

Camporesi, S., & Bortolotti, L. (2008). Reproductive cloning in humans and therapeutic cloning in primates: is the ethical debate catching up with the recent scientific advances? Journal of medical ethics, 34(9), e15-e15. https://doi.org/10.1136/jme.2007.023879

Egypt's Dar Al-Ifta. (2017, February 12). Fatwa No. 2329: Cloning- and Genetic Engineering. https://www.dar-alifta.org/ar/ViewResearchFatwa/2329/الاستنساخ-والهندسة-الوراثية

Hall, V. J., Stojkovic, P., & Stojkovic, M. (2006). Using therapeutic cloning to fight human disease: a conundrum or reality? Stem cells, 24(7), 1628-1637. https://doi.org/10.1634/stemcells.2005-0592

Hosseinkhani, H. (2019). Nanomaterials in advanced medicine. Wiley-VCH GmbH. DOI: https://doi.org/10.1002/9783527818921

Hosseinkhani, H. (2023). Biomedical engineering: Materials, technology, and applications. John Wiley & Sons. DOI: https://doi.org/10.1002/9783527826674

Ibn Qudamah, A. M. (1968). Al-Mughni. Cairo Library, Cairo.

Issa, R. (2014). Human cloning: a medical, jurisprudential and legal study. Dar Al-Nafis, Jordan.

Kfoury, C. (2007). Therapeutic cloning: promises and issues. McGill Journal of Medicine: MJM, 10(2), 112. https://pubmed.ncbi.nlm.nih.gov/18523539

Khalifa, M. S. (2004). Human cloning is a scientific, religious and legal study. Dar Al-Nahda Al-Arabiya, Cairo.

Larijani, B., & Zahedi, F. (2004). Islamic perspective on human cloning and stem cell research. Transplantation Proceedings, 36(10), 3188-3189. https://doi.org/10.1016/j.transproceed.2004.10.076

McKinnell, R. G., & Di Berardino, M. A. (1999). The biology of cloning: history and rationale. BioScience, 49(11), 875-885. https://doi.org/10.2307/1313647

Nippert, I. (2002). The pros and cons of human therapeutic cloning in the public debate. Journal of Biotechnology, 98(1), 53-60. https://doi.org/10.1016/S0168-1656(02)00085-8

Pavelic, K. (2004). Arguments for human therapeutic cloning. Bosnian journal of basic medical sciences, 4(1), 15. https://doi.org/10.17305%2Fbjbms.2004.3454

Rahbaran, M., Razeghian, E., Maashi, M. S., Jalil, A. T., Widjaja, G., Thangavelu, L., ... & Jarahian, M. (2021). Cloning and embryo splitting in mammalians: brief history, methods, and achievements. Stem Cells International, 2021(1), 2347506. 11 pages, 2021. https://doi.org/10.1155/2021/2347506

Rogers, K. (Ed.). (2015). Cloning. Encyclopaedia Britannica.

Saudi Royal Decree No. M/128. (2024). Approving the Arab Agreement to Prevent and Combat Human Cloning, Umm Al-Qura, the Official Newspaper of the Kingdom of Saudi Arabia. https://uqn.gov.sa/details?p=20030

The European Council for Fatwa and Research. (2003, January). Resolution 33 (1/10): Cloning Ruling. 10th Session, Dublin, Ireland. https://goo.gl/npH0mG

The General Secretariat of the League of Arab States. (2019, March 4). the Arab Agreement to Prevent and Combat Human Cloning. https://uqn.gov.sa/?p=17352

The International Islamic Fiqh Academy. (1988, February 11). Resolution No. 26 (1/4). A Human receiving the Organs of another Human, Dead or Alive (Organ Transplantation). http://www.iifa-aifi.org/1698.html

the International Islamic Fiqh Academy. (1997, July 3). Resolution No. 94 (2/10) Human Cloning . https://iifa-aifi.org/ar/2013.html

the Islamic Fiqh Academy Council. (2010). Resolution No. 99 (3/17): Stem Cells. Journal of the Islamic Fiqh Academy, 3, 429-431. https://ketabonline.com/ar/books/24407/read?part=1&page=100&index=4390838

United Nations General Assembly. (2005, March 8). The United Nations Declaration on Human Cloning No. 59/280. https://news.un.org/ar/story/2005/03/35422

World Health Organization. (2005). Executive Board 115. Reproductive cloning of human beings: status of the debate in the United Nations General Assembly: report by the Secretariat. https://iris.who.int/handle/10665/20263

Youssef, W. R. (2014). Reproduction operations between legalization and criminalization. PhD thesis, Faculty of Law, Ain Shams University.