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RESEARCH ARTICLE

STEM CELL THERAPY: ITS LEGALITY IN THE PERSPECTIVES OF INDONESIAN LAW AND PROGRESSIVE ISLAMIC JURISPRUDENCE

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Abstract

Stem cell therapy presents an innovative medical intervention that can fix the damages on the human body by repairing, replacing, restoring, and regenerating the damaged tissue and organs (so called regenerative medicine) without surgery. It has been undergoing an axiological and revolutionary progress both in medical treatments (treatments for degenerative diseases, genetic disorders, damages or death of nerves and tissues / necrosis) and preventive actions such as aging prevention and reverse aging treatments. This study is library research and aims to overview such therapy from the perspectives of Indonesian law and progressive fiqh (Islamic jurisprudence). The result shows that, according to the Indonesian law and the Islamic progressive fiqh, the stem cell therapy for the treatment of degenerative diseases, genetic disorders and tissue damages or for reverse aging treatment using the cells that come from oneself (autologous) and from other people (allogeneic) is permissible, whereas if the cells come from embryonic cells, animals (xenogeneic) or plants, the Indonesian Law prohibits it while the Islamic progressive fiqh deems it permissible under strict conditions.

Introduction:-

In the last decade, the discourse of stem cell therapy has been a trending topic in the medical community as well as non-medical one (Serour & Dickens 2001; Aksoy 2005; al-Aqeel 2009; Ng et al. 2014; Hua 2016; Bang 2016). This is so because this kind of therapy is an innovative medical intervention that tries to improve the damages of the human body by repairing, replacing, restoring, and regenerating the damaged tissues and organs (so called regenerative medicine) without having to undergo surgery (Mastri, Lin & Lee 2014; Mæder & Grersbach 2016). Historically, there are several versions that elaborate about when stem cell therapy was exactly found, one of which stated that stem cells began popularly to be used in medicine since the 1950s. Meanwhile, it was used as a therapeutic treatment since the success of a bone marrow transplantation for the first time in 1968. Eventually, researchers in medicine found that stem cells from the umbilical cord could be used by a human baby and his/her family to cure various diseases. The first umbilical cord blood transplantation was performed on a child with a Fanconi Anemia (FA) in Paris in 1988.

Stem cells have a homing and plasticity properties, when they are inserted into a patient's body (either through transplants, injections or pitter), they will search for the area of injury and will then proliferate and differentiate into tissues in accordance with the environment in which they grow up. Through stem cell therapies, organs that have

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been damaged due to various diseases, genetic disorders, pollution, wrong diet and unhealthy lifestyle as well as the side effects of long-term consumption of chemical drugs can be cured with the inclusion of new healthy stem cells that will continuously form new cells and replace the organ's damaged cells' functions (Campbell et al. 2013).

Stem cells can be derived from oneself (autologous) (Atkins et al. 2016; Naofumi, Ogata & Nakata 2016; Younes et al. 2016), from another person (allogeneic), - either in the form of adult stem cells or embryonic stem cells (ESCs) (Brundo et al. 2016), - and from animals (xenogeneic) (Hu et al. 2016). Adult stem cells are derived from bone marrow, fat tissue (adipose), Peripheral Blood Mononucleotide Cell (PBMC), skin tissue, and Umbilical Cord Blood Cells (UMCB). ESCs may be derived from human embryos that can be obtained through aborted fetuses (cadaveric stem cell), discarded embryos (in vitro fertilization), and research embryos created in laboratory. Hence, stem cells can come from oneself, other persons or animals. As a part of biomedicine that have developed axiologically and revolutionarily, stem cells have been very useful for medical treatments especially in their ability to cure degenerative diseases, genetic disorders, damages on nerve and cell tissues, and for preventive action in premature aging and reverse aging (Karunadharma et al. 2015; Mohrin et al. 2015).

Some Muslim scholars analogize the law concerning stem cell as that of cloning which is ḥarām (unlawful/forbidden). This results in ambiguity on the law of using stem cells in a therapy, especially for Muslim patients (al-Aqeel 2007, Hua 2016). Cloning itself may be understood as a process of taking a cell from a human body, whether male or female, then coupling its nucleus with a female's ovum cell in which its nucleus has been discarded eventually to transform it into a fetus (al-Aqeel 2007; Damad 2008; Ahmad 2016). This biotechnology is acknowledged as a spectacular gateway to enhance the quality of human offspring, - their intelligence, strength, and beauty to mention some, - as well as an express way to multiply the number of offspring without the need for a conventional reproduction process.

On the other hand, some minority Muslim scholars who allow it base their arguments on the transcendental foundation of the Holy Quran Surah (QS) al-Qamar [54]: 49 (Ali 1992:1394) and al-Furqān [25]: 2 (Ali 1992:889). Accorrding to them, cloning is actually not an intervention on creation nor a violation God's prerogative right and duty of creation, but it is, on the other hand, an authentication of His majesty and power. Cloning is just one of many inventions about a number of nature's laws and secrets and there is no element of creation in it. The substance of this invention is not creating something out of nothing, but only revealing what is already there.

On the other hand, those who do not allow it, present forward some arguments; first, the offspring results from a cloning is produced in a way that is not natural (i.e. from an insemination of ovum by sperm cells), which is contrary to the QS al-Najm [53]: 45-46 (Ali 1992:1383) and al-Qiyāmah [75]: 37-38 (Ali 1992:1569). Second, such offspring does not have a biological and descent father which is contrary to the QS al-Aḥzāb [33]: 5 (Ali 1992:1056). Third, a cloning process will eliminate lineage, whereas lineage is considered very important in Islam as it relates to many other matters including custodianship in a marriage, right of maintainance, right of inheritance, and maḥrām (consanguinity) relationship. Regarding the lineage, there are some hadith of the Prophet that warn people for being extra careful about it. In a hadith narrated by Muslim (2001) no. 467, the Prophet said: "Whoever claims to be a child of other than his/her real father or a slave that gives his/her loyalty to those who are not his/her true guardian, then the curse of God, the Angels, and all men will befall him/her, and on the Day of Judgment, God will not accept from him/her, both the obligations and the recommended (that he/she had done)." Likewise, al-Bukhari (1998) narrated a hadith no. 6766 that the Prophet said: "Whoever acknowledges a father to other than his/her real father, while he/she knows that the person is not his/her father, then heaven is forbidden for him/her." Fourth, a cloning process will obscure many of the provisions of laws as previously mentioned regarding custodianship in a marriage, lineage, right of maintainance, right of inheritance, and maḥrām relationship.

Medically, it can be stated that stem cells are not the same as cloning, so some alternative Islamic laws on therapies, especially ones that employ stem cells and their utilization, are needed. From the source of stem cells, for example, one will be faced with a code of ethics that is still controversial, particularly with regard to the use of ESCs (al-Aqeel 2007; Zhang et al. 2016; Zhou et al. 2016). Ethical questions include whether a human embryo is perceived the same as a human being and must such embryo be treated equally with humans or as something that has the potential to become a human being, or as the living tissue of the body. Whereas in term of utilization, especially for aging prevention or reverse aging, the issue is about whether such therapy conflicts with the God's law of nature or not. This article will try to offer an alternative legality of Indonesian and Islamic laws on stem cell therapy for preventive measures to premature aging and for reverse aging treatment.

Research Methods:-

This study is a qualitative library research with normative and empirical-juridical approaches. The primary data sources used are: (1) in addressing the issue of stem cells, the author refers to Analysis of Biological Development by Klaus Kalthoff (2000), Medical Microbiology by Geo F Brooks et.al. (2007), and Aplikasi Terapeutik Sel Stem Embrionik pada Berbagai Penyakit Degeneratif [The Embryonic Stem Cell Therapeutic Applications in Various Degenerative Diseases] by Boenyamin Setiawan (2006), (2) in viewing the issue of stem cells in the perspective of Indonesian law, the author refers to the Government of Indonesia (GoI)'s (2009) Undang-Undang No. 36 Tahun 2009 tentang Kesehatan [the Indonesian Act No. 36 of 2009 concerning Health], the GoI's (2013) Peraturan Menteri Kesehatan No. 62 Tahun 2013 tentang Penyelenggaraan Bank Jaringan dan/atau Sel [The Minister of Health Regulation No. 62 of 2013 concerning the Management of Bank for Tissues and/or Cells], and the GoI's (2018) Peraturan Menteri Kesehatan No. 32 Tahun 2018 tentang Penyelenggaraan Pelayanan Sel Punca dan/atau Sel [The Minister of Health Regulation No. 32 of 2018 concerning the Management of Stem Cells and/or Cells Services], and (3) in offering the legality of Islamic law through progressive uṣūl fiqh (fundamentals of Islamic jurisprudence), the author refers to the books of Uṣūl Fiqh by Abdul Wahab Khallaf (1987), Usul al-Fiqh by Muhammad Abu Zahra (1995), Maqāṣid Sharī'ah by al-Shatibi (1999), Maqāṣid al-Sharī'ah as Philosophy of Islamic Law: A Systems Approach by Jasser Auda (2008), and Ijtihād Maqāṣidi by A. Halil Thahir (2019). The data collection technique used was the documentary one and then, the data were analyzed using content, comparative, and critical analysis

In offering an academic ijtihād (diligent reasoning), the author employed clinical laws research methods that try to find some alternative legal clauses to address new problems, through the integration of revelation and reason employing logic and empirical experiences (Safi 1996; Anwar 2002), which, in this context, is the stem cell therapy. This research of normative laws were developed through the ontological-epistemological-axiological studies of stem cells, then a search on Indonesian regulations as well as transcendental legal basis on the Quranic verses and ḥadīth aḥkām (the Prophet's traditions on laws), Islam jurists' opinions, legal theories, and legal maxims was performed. The istinbāṭ (practices issuing laws or decisions based on the Qur'an and or hadith) method used was the progressive uṣūl fiqh considering it to be advanced, fast, and responsive to immediately provide alternative, preventive, and solution-providing legal provisions over the various new and actual problems faced by Muslims by combining the methods of maṣlaḥah mursalah (unrestricted interest) and ijtihād maqṣidi (diligent reasoning based on law's objectives).

Conceptual Study:-

The Ontological Essence of Stem Cell Therapy:

Stem cell therapy is a type of therapy that has the basic principles of a new treatment using stem cells. Stem cells are defined as undifferentiated cells that have a very high potential to develop into many different cell types in the body. They serve as a repair system for the body to replace the body's damaged cells for the organism;s survival. When a stem cell divides, the new cell has the potential to remain as a stem cell or become another type of cell with a more specialized function, such as a muscle cell, a red blood cell or a brain cell.

Some general properties owned by stem cells are: an unspecialized stem cell has an ability to differentiate into another more specialized cell. In this case a stem cell is capable to develop into various types of mature cells such as a nerve cell, a heart's muscle cell, a skeletal muscle cell, a pancreatic cell, and so on. It is also able to renew or regenerate itself (so called self-regenerating / self-renewing). In this context, a stem cell can make copies of the exact same cell as itself through cell division.

Based on its ability to differentiate, stem cells can be classified into three; first, totipotent cells, which are the stem cells that have not changed or differentiate to a certain type of cell and have the potential to become any tissue and organ of a living creature (a human in this case). Such totipotent cells will form the whole person when planted in a female's womb (uterus). These cells are derived from an ovum and have the ability to develop into cells and tissues of an embryo and other tissues that support the growth of the embryo itself including the extra-embryonic tissues, placenta, and umbilical cord. A mammal has 200 types of cells consisting of nerve cells (neurons), muscle cells (myocytes), skin cells (epithelial), blood cells (erythrocytes, monocytes, lymphocytes, etc.), bone cells (osteocytes), and cartilage cells (chondrocytes).

Second, pluripotent cells, which come from three embryonic germ layers derived from the blastocyst inner cell before they attach to the uterine wall. These three layers consist of mesoderm, endoderm, and ectoderm which serve as the origin of all cells in the body. Mesoderm is the origin of the bone marrow, adrenal cortex, lymphatic tissue,

smooth muscle, cardiac muscle, skeletal muscle, connective tissue, urogenital system, and the vascular system. Endoderm is the origin of the thymus, thyroid, parathyroid, larynx, trachea, lung, bladder, vagina, urethra, and gastrointestinal tract (GIT). While the last layer, ectoderm, is the origin of the skin, nerves, the adrenal medulla, pituitary, connective tissues of head and face, eyes and ears. And third, unipotent cells, which are derived from an organ so they are only capable of producing cells of their own type, but have the property of self-renewal required to be labeled a stem cell. Examples include (adult) muscle stem cells.

From the above classification, it can be concluded that stem cells can be in the form of embryonic and adult stem cells. Germinal stem cells have the totipotent and pluripotent characteristics, these cells are derived from an embryonic tissue of four day age. If the cells are derived from a 5 to10 week fetal gonadal ridge, they are called embryonic germ cells. While adult stem cells have the unipotent characteristics and obtained from a particular organ. Adult stem cells are progenitor or precursor cells that will develop into mature cells with a specific shape and characteristics. When this differentiation takes place, certain genes are activated and other genes are inactivated.

Eventhough it is difficult to be isolated and identified, adult stem cells play the major role in the therapeutic practices because they are spared from controversy. Adult stem cells are often derived from bone marrow stem cells and consist of hematopoietic and stromal stem cells. Additionally stem cells can also be found in the umbilical cord and also in the cerebral cells especially in the hippocampus.

Based on their original source, stem cells which are found in various tissues of the human body can be identified through the following classification: first, zygote, which are those cells at the stage shortly after the sperm meets the ovum. They are also called embryonic stem cells. They are taken from inner cell mass of a blastocyst (embryo consisting of 50-150 cells, approximately of day-5-post-fertilization). Embryonic stem cells are usually obtained from leftover embryos used in IVF (in vitro fertilization). Nowadays techniques to take out embryonic stem cells without harming the embryo itself have been developed. By this, the embryo can continue to live and grow, so that, at least, this can reduce the ethical controversy about embryonic stem cells.

Second is fetus which is the development after the phase of the embryo and before the birth. It can be obtained from the abortion clinic. Third, umbilical cord blood stem cells, which are the cells taken from placenta and umbilical cord blood immediately after birth. Stem cells from umbilical cord blood are a type of hematopoietic stem cells and some scientists classify them into adult stem cells.

Adult stem cells are cells taken from adult tissues, such as bone marrow. There are two types of the bone marrowstem cells, namely: (1) hematopoietic stem cells, which, apart from umbilical cord blood and bone marrow, can also be obtained from peripheral blood, and (2) stromal stem cells or also known as mesenchymal stem cells, which are of adult other tissues such as the central nervous system, adiposities (fat tissue), skeletal muscle and pancreas. Adult stem cells have a plasticity characteristic. It means that in addition to be capable to differentiate into its appropriate origin, they also can differentiate into other tissues' cells, for examples neural stem cells can turn into blood cells, or stromal stem cells from bone marrow can turn into heart's muscle cells, and so on (http://riffulin.blogspot.com/2015/02 2015).

The Epistemology of Stem Cells:

There are several versions that elaborate about when this stem cell therapy is exactly found, one of which states that a therapeutic treatment using stem cells was used since the success of bone marrow transplantation for the first time in 1968. Then the pluripotent embryonic stem cells and adult multipotent stem cells were used to create human tissue to be transplanted into patients with indications of having disorders caused by degeneration or injury of cells, tissues, and organs. The developments of techniques of growing human embryonic stem cells in culture and increased knowledge of researchers on cell's differentiation pathways have expanded the use of this therapy. In another version, it was discovered in 1963 when researchers in medicine found that stem cells from the umbilical cord could be used by the born-baby and his/her family to cure various diseases. The blood in the baby's placenta and umbilical cord contains millions of blood-forming stem cells which are similar to stem cells found in bone marrow.

The transplantation of umbilical cord blood was first performed on a child with Fanconi anemia in Paris in 1988. Its success opened new vistas in the use of umbilical cord blood that were not regarded useful. After further investigation, there found many benefits offered compared with the mostly favored bone marrow transplant. Adult

stem cells from umbilical cord blood have a higher proliferation capability than that of the bone marrow. Better still, a transplantation using adult stem cells from umbilical cord blood has higher match rate than that of bone marrow.

According to Boenyamin Setiawan (2014), stem cell therapy was first known using transplantation and injection methods, but the use of this method required a considerable cost, starting from Rp 300 millions (around USD 21,000) for a single therapy to Rp 20 billions (around USD 1.4 millions) for one complete package of therapy. After an intensive study for 15 years, the oral method was successfully applied. In the last few years, thousands of people suffering from various diseases which according to medical science could not be cured were successfully saved and recovered from their illnesses. Furthermore, the cost required to have an oral method therapy is also relatively much cheaper than that of transplantation and injection methods.

The Axiology of Stem Cells:

In the contemporary development, stem cells in the bone marrow and umbilical cord blood have so far been successfully used to treat various blood disorders. Until now at least 3,000 umbilical cord blood transplants had been performed. More than 72 diseases are proven to be able to be treated with stem cell transplants among them leukemia, bone loss (osteoporosis), and breast cancer. Most of the diseases cured are acute diseases such as acute and chronic leukemia, Franconia anemia, aplastic anemia and auto-immune diseases.

A stem cell therapy is very powerful to deal with degenerative illnesses such as Parkinson's, Alzheimer's, diabetes mellitus, - particularly the Insulin Dependent Diabetes Mellitus (IDDM),- stroke, myocardial infraction, atherosclerosis, and many more, as well as auto immune diseases such as lupus. Experts claim that stem cell therapy is the best therapy to cope with degenerative and auto immune diseases. Furthermore, the ability to cure diseases caused by nerve and tissue damages such as spinal cord injury, paralysis, blindness due to rupture of the eye's nerves, and blindness due to eyeball damaged by sulfuric acid splash is staggering the medical community (Citrawati 2011:99).

Stem cell therapy is not only beneficial to cope with various diseases that have been incurable and untreatable, but also very useful to anti-aging treatment so a person will stay pretty, interesting, passionate, fit and energetic. Its ability to replace dead cells with new young and healthy cells is necessary for anyone who wants to stay beautiful and healthy and to stay away from any illness caused by decreased function or damage of his/her body's organ.

Results and Discussion:-

The results of this library research can be mapped into two categories: first is relating to the sources of stem cell therapy and second is relating to its utilization. From their sources, stem cell therapy may be classified into three: (1) they are derived from oneself (autologous), it may be in the form of using any cell within one's own body; (2) they are from other people either in the form of embryonic or adult cells, and (3) they come from animals (xenogenic).

Relating to its utilization, stem cell therapy may be classified into two: (1) for the treatment of degenerative diseases, genetic disorders, damages on nerve and tissue cells, and (2) for preventing measures especially on reverse aging treatment. Until now there have been identified about 50 kinds of degenerative diseases (i.e. the decreasing of organ function which accompanies the aging process) including Parkinson's, Alzheimer's, diabetes mellitus, - particularly the Insulin Dependent Diabetes Mellitus (IDDM),- stroke, myocardial infraction, and atherosclerosis. Other diseases that had been cured include genetic disorder diseases (diseases caused by one or more gene abnormalities that cause a clinical phenotype conditions), there are currently about 4,000 genetic diseases have been identified including auto immune, lupus, Down syndrome, hemophilia and others, and diseases caused by nerve and tissue damages like spinal cord injury, paralysis, blindness due to rupture of the eye's nerves, and blindness due to eyeball damaged by sulfuric acid splash.

The second utilization of stem cell therapy is for anti-aging or reverse aging treatment which is to rejuvenate one's body from a premature aging or, in other words, it is an attempt to halt or even to reverse the aging process back to a body's codition of being pretty, young, attractive, passionate, fit, and energetic. The rate of an aging process is 30% influenced by genetics / heredity and 70% is affected by one's lifestyle. A premature aging is an aging process which is not natural and occurs faster than it should. The causes can be both internal and external factors; these factors accelerate the aging process of the body faster than it should occur naturally. Premature aging can occur on

the brain, circulation, heart, joints, alimentary canal, immune system, and skin and it may be caused by lack of sleep, substance abuse, sunlight (ultraviolet rays), and free radicals.

Discussion:-

The Indonesian Law's Perspective:

The objectives of health development in Indonesia become an integral part of those of the national development which are raise everyone's awareness, will, and ability to live healthy in order to realize the highest degree of public health as an investment for developing productive human resources socially and economically (Government of Indonesia (GoI) 2009). Meanwhile, Hermien Hadiati Koeswadji (1998) stated that in principle laws regarding health rest on the right to health care as a basic social right which is supported by 2 (two) individual basic rights consisting of the rights to information and the right to self-determination. Therefore, any effort to attain a healthy life is a part of human basic right.

Relating to such effort, stem cell therapy for medical treatments have indeed become an inevitable part of modern life, including in Indonesia. The Indonesian government had arranged the use of stem cells as a means of health therapy by issuing an Act No. 36 of 2009 on Health. As its implementing regulations, the Indonesian Minister of Health had also issued several regulations relating to stem cells. The latest are the Minister of Health Regulation No. 62 of 2013 concerning the Management of Bank of Tissues and/or Cells and No. 32 of 2018 concerning the Management of Stem Cells and/or Cells Services.

According to the said regulations, stem cell therapy for medical treatments is, basically, permitted under Indonesian laws although there are some strict conditions to follow. Clearly, it is stated in the Act No. 36 of 2009 in which the utilization of stem cells is regulated in article 64 which reads: (1) Healing of diseases and health recovery can be carried out through organ and / or tissue transplantation, drug and/or medical devices implants, plastic surgery and reconstruction, and stem cell use, (2) Organ and/or tissue transplants as referred to in paragraph (1) are carried out only for humanitarian purposes and are prohibited from being commercialized, and (3) Organs and/or body tissues are prohibited from being traded under any pretext (GoI 2009). Furthermore, in article 70, the Act states that: (1) Stem cells can only be used for the purpose of curing diseases and recovering one's health and are prohibited from being used for reproduction purposes, (2) Stem cells as referred to in paragraph (1) may not originate from embryonic stem cells, and (3) Further provisions regarding the use of stem cells as referred to in the paragraphs (1) and (2) are regulated by Ministerial Regulations (GoI 2009). So, principally, stem cell therapy is permitted for healing diseases and humanitarian purposes but not for reproductive purposes. Besides, the tissues and cells used may not be commercialized and not originate from embryonic stem cells.

Meanwhile, to implement the said Act, the latest regulations issued by the Indonesian Minister of Health concerning stem cell therapy are the Minister of Health Regulation No. 62 of 2013 and that of No. 32 of 2018. The article 20 of the former regulations states the followings: (1) Tissues and/or cells donor(s) are voluntary, (2) Tissuess and/or cells taken by the Bank for transplantation services may originate from dead or alive donor(s), (3) The tissues taken from the donor's body as referred to in paragraph (1) is in accordance with the will of the donor, (4) The tissues taken from alive donor(s) as referred to in paragraph (2) originate from the tissues of medical operations' residual and/or amniotic membranes. (5) Cells taken from alive donor(s) as referred to in paragraph (2) originate from, among others, bone marrow, fat tissues, and non-embryonic stem cells (GoI 2013). Meanwhile, the article 21 reads: (1) Tissuess and/or cells originating from humans are prohibited from being traded, (2) Tissuess originating from animals can be traded in accordance with statutory provisions (GoI 2013). These articles regulate the origin of tissues or cells (including stem cells) used in medical treatment which must come from voluntary 'dead or alive' donor(s) and must not be traded. Tissues originating from animals, however, may be traded under certain provision.

The latter regulation concerns with the management of medical services utilizing stem cells and/or cells. The article 4 states that: (1) Stem cells and/or cells services can only be carried out for the purpose of healing disease and restoring health, and are prohibited from being used for reproductive purposes, (2) Diseases as referred to in paragraph (1) include degenerative and non-regenerative diseases, (3) Health recovery as referred to in paragraph (1) includes rejuvenation of cells, tissues, and organs, and (4) Prohibition for the purpose of reproduction as referred to in paragraph (1) is a prohibition on the use of stem cells and/or cells for the 'creation' of new individuals (GoI 2018). The article 5 states that: (1) Stem cells and / or cells that are used for the benefit of health services are sourced from humans, and are not allowed to use sources originating from animals and plants, (2) Stem cells and / or cells from humans as referred to in paragraph (1) are taken from the voluntary donor without asking for

compensation, and (3) The donor referred to in paragraph (2) is from oneself or another person (GoI 2013). The article 6 states that: (1) Stem cell types consist of: a). embryonic stem cells, and b) nonembrionic stem cells, and (2) Embryonic stem cells as referred to in paragraph (1) letter (a) are prohibited from being used to cure diseases and restore health (GoI 2013). From these regulations, it can be concluded that basically stem cell therapy is allowed for healing diseases and restoring health, and not for reproductive purposes.The cells used must be from non-embryonic human source and not from animals or plants. Thus, in the perspective of Indonesian laws, stem cell therapy is allowed but under some strict conditions.

The Progressive Islamic Jurisprudential Perspective:

Islamic law is believed to be able to adapt to social changes and modernization (Mahmasani 1998). This is so because Islamic law is purposed to achieve the benefit for mankind, therefore, it is supposed to be able to appreciate finely every social change and modernization for these two matters are considered taking parts in efforts to achieve maqāṣid sharī'ah (purposefulness of Islamic law). Hence, given the said purpose, Islamic law must be flexible. Based on the works of previous scholars, al-Shaṭibi (1999) explained and concluded that all scholars agree that Allah establishes various law provisions with a purpose to maintain the five basic elements of human (al-ḍarūriyyat al-khams) namely: preserving one's religion, life, intellect, descendants, and property. Maintaining one's health is, directly or indirectly, a part of preserving those basic needs.

Through the understanding of the verses of the Quran and their interpretation, we have not yet encountered even a single verse which textually has a meaning of stem cell, however, some of the following transcendental foundations can be used as sources for offering legal clauses or alternative law on treatment and prevention by using stem cells.

In the QS al-Māidah [5]: 32, God says: "And if anyone saved a life, it would be as if he saved the life of the whole people" (Ali 1992:257) As previously elaborated, stem cells used in medical treatments may originate from oneself, from others, or from animals and even plants. So, whenever anyone is willing to donate his/her cells for healing and saving another's life, he/she is regarded as having a very noble value just as he/she had saved many people. The moral message of this verse does not impose only on specific tribe, race or religious background for the recipient(s); this means that this life-saving mission is universal without any space, time and faith partitions.

In the QS al-Baqarah [2]: 195, God says: "And make not your own hands contribute to (your) destruction" (Ali 1992:78). Meanwhile, His commandment in the QS al-Nisā' [4]: 29 can be used as ta'qīd (an endorser) for those two previous verses. He says: "O ye who believe! Eat not up your property among yourselves in vanities, but let there be amongst you traffic and trade by mutual good will. Nor kill (destroy) yourselves for verily Allah hath been to you Most Mercifull" (Ali 1992:193-194). Through an analogical understanding, this verse can be summed up as bringing a medical message that anyone can neither carry (actively) nor allow (passively) himself/herself to destruction. Several genetic disorders and degenerative diseases or tissue or nerve damages were decades before judged as being acute, critical, in the final stadium or even hopeless to be cured. However, the discovery of the stem cell therapy gives life expectancy for such patients. Thus, there must be maximum effort for curing action whenever the death has not yet come.

These theological foundations are reinforced by several other verses in the Holy Quran. In the QS Yunus [10]: 49 God says that the time of death can neither be accelerated nor postponed (Ali 1992:493). Whereas in the QS al-An'ām [6]:119 God states the permissibility to consume and utilize something ḥarām (unlawful) under compulsion of necessity (Ali 1992:329).

The next transcendental foundations are the sayings of the Prophet Muhammad (hadith). One was a hadith no. 3874 narrated by Imam Abu Dawud (n.d.) who narrated from Usamah bin Syuraik that the Prophet had said:"Verily God the Almighty every time He creates a disease, He also creates the medicine. So, go to have treatment!" Al-Bukhari (1998) narrated a hadith no. 5354 with a similar meaning that the Prophet said: "Verily God does not create illnees but He also provides the antidote," whereas in Imam Muslim's (2001) narrattion no. 2206, the Prophet said:"All diseases have a cure. If it matches between the disease and the medicine, it will recover with God's permission."

Another hadith no. 4/278 narrated by Imam Ahmad (1978) states that a Companion reported: "I was with the Prophet, and then came the Bedouin Arabs from this place and there. They said, 'O Messenger of God, can we go to a doctor?' So the Prophet replied: "Yes. O God's servants, seek your medical treatment for God the Almighty does not create disease unless He also creates a cure for it, except one disease [that is] dementia." There are also a hadith

no. 223 narrated by al-Bukhari (1998) and no. 4447 by Muslim (2001) indicate a legal clause of the permissibility to have a treatment with a camel's urine, one hadith no. 283 narrated by al-Bukhari (1998) and no. 371 by Muslim (2001) which state that the body of believers are considered not unclean either alive or dead, hadiths no. 1961 and no. 2930 narrated by Tirmiżi (2008) about seeking for a treatment for a sick person, a hadith no. 3436 narrated by Ibnu Majah (n.d.) about curing a sick person, and hadiths no. 18235 and no. 19394 narrated by Ahmad (1978) on nose transplant.

The istinbāṭ method used is the progressive uṣūl fiqh which is an istinbāṭ methodology of Islamic law that is advanced, fast, and responsive to immediately provide alternative, preventive, and trouble-shooting law provisions on new and actual problems faced by Muslims by combining methods of maṣlaḥah mursalah and ijtihād maqṣīdi. The method of maṣlaḥah mursalah is used to excavate clauses of law based on the benefits of stem cells which are, textually, not commanded nor forbidden. The method of ijtihād maqṣīdi (al-Shatibi 1999; Auda, 2008; Thahir 2019) is used to explore the universal values of the benefits of the verses cited above.

The legal maxims of Islamic jurisprudence (as-Safi 2012; Elghariani 2012; Miskhah 2013) used in discussing the issue of stem cell therapy are explained orderly as follows:

1. The first maxim: al-aṣlu fī al-a'yān al-ibāḥah wa al-ṭahārah (the original law of all things is permissible and pure). In this context, stem cells, substantially and naturally, are part of a pure human body and can be medically proven to have a significant benefit value for the owner himself/herself or when they are used by others.
2. The second maxim: al-aṣlu fī al-maḍāri al-taḥrīm (the original law of all harmful things is ḥarām (unlawful/prohibited). An abortion is basically forbidden unless it is medically believed that the existence of the fetus threatens the life of the mother. Furthermore, an abortion is prohibited if it is done for the purpose of taking the fetus' cells to be used for treatment either for the baby's mother or for others. The prohibition of aborting a fetus for a stem cell therapy is also reinforced by the following third, fourth, and fifth maxims. The third maxim says: lā ḍarra wa lā ḍirār (there should be neither harming nor reciprocating harm), the fourth says: al-ḍarār lā yuzālu bi al-ḍarār aw al-ḍarār lā yuzālu bi mithlih (harm should not be warded off by another harm or by a similitude), whereas the fifth says: al-ḍarār al-ashaddu yuzāl bi al-ḍarār al-akhaff (a severe harm shall be removed by a lesser harm).
3. The sixth maxim says: al-ḍarār yudfa'u bi qadr al-imkān (harm should be warded off as much as possible) and the seventh says: al-ḍarar yuzāl (harm must be avoided). These maxims are similar to the third maxim as previously mentioned. The eighth maxim states: al-ḍarār lā yakūnu qadīman (harm is not justified by being old). Based on these three maxims, it can be concluded that any effort to heal a disease of any kind, for any reason, and even in any stadium, must persistently be pursued, one of them is with the stem cell therapy.
4. The ninth maxim: iżā ta'āraḍat mafsadātāni rū'iya a'ẓamuhumā ḍarār bi irtikābi akhaffihimā (in the presence of two harms, the greater one shall be warded off by the commission of the lesser one). In the case of stem cell therapy, a medical clarity is needed to decide which condition is more dangerous, destructive, and life-threatening, and then a heavier harm should take precedence to be treated. Or, the danger which is more widespread covering many subjects should take precedence over the more narrow one in which its scope only covers fewer subjects. This is in accordance with the tenth maxim that says: yutaḥammal al-ḍarār al-khāṣṣ li daf'i al-ḍarār al-'āmm (a private harm shall be tolerated to dispell a public harm), and the eleventh maxim that says: dar'u al-mafāsid awlā min jalb al-maṣāliḥ (avoiding detriment takes precedence over bringing about benefit).
5. The twelfth maxim says: al-mashaqqah tajlib al-taysīr (hardship begets ease). The thirteenth maxim says: Iżā ḍāq al-amr ittasa'a (anything narrowed shall be broadened). For people suffering from disease and premature aging, there have been found medical breakthroughs without surgery action which are easier and more effective, this is of course legitimized by Islamic law through these maxims.
6. The fourteenth maxim states: al-ḍarūrāt tubīḥ al-maḥẓūrāt (necessities render prohibited things permissible). Menstrual blood as one source of stem cells, substantially, is something that is najis (unclean), but if the blood contains cells that can cure certain diseases, then, based on the maxim of emergency, permissibility of its usage is allowed. However, its usage is bounded by the fifteenth maxim that says: mā jāza li 'użrin baṭala bi zawāih (should something become legal by a valid excuse, it becomes illegal when the excuse ends).
7. The sixteenth maxim says: al-iḍṭirār lā yubṭilu haqq al-ghayr (pressing necessity shall not annul the right of another) and the seventeenth maxim says: lā yajūzu li aḥadin an yataṣarrafa fī milki al-ghayr bilā iżnih (no one may dispose of another's property without the latter's permission). So, if the source of stem cells in such

therapy comes from others, it requires his/her permission or a consent of his/her heir if the cell owner has died. The seventeenth maxim relating to warranties applies only if the cell is already in the cell bank.

8. The eighteenth maxim says: al-hājah tanzila manzilat al-ḍarūrah ‘āmmah kāna au khāṣṣah (need is ranked necessity, be it public or private). The primary need in this case is hifẓ al-nafs (preserving one’s soul) which is a medical emergency to save the live of patient that can only be cured through a stem cell therapy.
9. The nineteenth maxim says: taṣarruf al-imām ‘ala al-rā’iyyati manūṭun bi al-maṣlaḥah (a leader’s policy regarding his people must be based on benefit). In this context, the government through the enactment of the state’s laws and regulations should immediately set up cell banks in some hospitals and provide medical treatment through stem cells therapies, which in fact provide far more benefits for medical treatments and preventive measures.

So, based on the transcendental source, using the methodology of the progressive uṣūl fiqh, and some legal maxim principles, several alternative Islamic laws on stem cells can be offered as follows: the therapy using stem cells which source from oneself (autologous), from other people (allogeneic), - both adult and embryonic stem cells,- and from animal (xenogeneic) for the treatment of degenerative diseases, genetic disorders and tissue damage, or for reverse aging treatment is permissible on strict conditions that: 1) if the source is from an embryo then it must not be intentionally aborted for the sake of using it for stem cell therapy, 2) if the cells are from animals, the animals used must be of those classified as ḥalāl (lawful) unless there is no other choice in which it is permissible to use animals that are ḥarām (forbidden / unlawful).

Conclusion:-

From the aforementioned discussion, it can be concluded that the stem cell therapy is permissible under the Indonesian law if the cells come from oneself (autologous) or from other people (allogeneic); and are non-embryonic, whereas the cells originate from embryonic cells, animals, and plants are prohibited. Meanwhile, Islamic law permits the stem cell therapy if the cells come from oneself (autologous) and from other people (allogeneic) – both of adult stem cells or ESCs,- and from animals (xenogeneic) on strict conditions that: 1) if the source is from an embryo then it must not be intentionally aborted for the sake of using it for stem cell therapy, 2) if the cells are from animals, the animals must be of those classified as ḥalāl (lawful) unless there is no other choice in which it is permissible to use animals that are ḥarām (forbidden/unlawful), both for the treatments of degenerative diseases, genetic disorders, and tissue damage as well as for reverse aging treatments.

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