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Cell Proliferation and Apoptotic Induction by *Ruqyah Shar'iyyah* Verses on MCF-7 Breast Cancer Cell

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Abstract
Ruqyah Syar'iyyah, which is the verses of Qur'anic and *sunnah* practiced for healing purposes, is one of the contemporary and alternative medicine (CAM). Various studies have proven the effectiveness of Qur'anic recitation in boosting spiritual and psychological behaviour among cancer patients but few studies proved its effectiveness on cancer cell lines scientifically. Therefore, this study was aimed to evaluate the effects of *Ruqyah Shar'iyyah* on MCF-7 breast cancer cell lines on cell proliferation and morphology. The study involved direct Qur'anic verses recitation exposure to MCF-7 cell line for 12- and 24-hour treatment and their apoptotic and proliferation activities were observed using trypan blue exclusion assay and inverted phase contrast microscope. The results showed that cell proliferation in treatment groups were slightly lower than control groups for both 12 and 24 hours with 95.69% in control as compared to 93.54% of cell viability in treated cell line for 12- hour treatment. Meanwhile, the 24-hour treatment demonstrated 95.11% of cell viability in control group while 92.34% in treated group. The morphology also exhibited apoptotic cells were observed more in treated compared to control group. Though the results are insignificant, it gives better insight about the effects of *Ruqyah Shar'iyyah* recitation on breast cancer cell lines. This study recommends extending the treatment times to obtain significant results.
Keywords: apoptosis, proliferation, *Ruqyah Shar'iyyah*, MCF-7 cell line, cell

Abstrak
Ruqyah Syar'iyyah iaitu ayat-ayat al-Quran dan sunnah yang diamalkan bertujuan untuk penyembuhan merupakan salah satu perubatan kontemporari dan alternatif (*contemporary and alternative medicine*). Pelbagai kajian telah membuktikan keberkesanan bacaan al-Quran dalam meningkatkan perilakuan rohani dan psikologi dalam kalangan pesakit kanser tetapi hanya sedikit kajian yang membuktikan keberkesanannya terhadap turunan sel kanser secara saintifik. Oleh itu, kajian ini bertujuan untuk menilai kesan Ruqyah Shar'iyyah terhadap turunan sel kanser payudara MCF-7 terhadap proliferasi dan morfologi sel. Kajian itu melibatkan pendedahan bacaan ayat-ayat Al-Qur'an secara langsung kepada turunan sel MCF-7 untuk rawatan selama 12 dan 24 jam dan aktiviti *'apoptotic'* dan proliferasi mereka diperhatikan menggunakan ujian penyisihan biru *'trypan'* dan mikroskop kontras fasa sonsang. Keputusan menunjukkan bahawa proliferasi sel dalam kumpulan rawatan adalah lebih rendah sedikit daripada kumpulan kawalan untuk kedua-dua rawatan selama 12 dan 24 jam dengan 95.69% bagi rawatan kawalan berbanding dengan 93.54% kelansungan sel dalam turunan sel yang dirawat untuk rawatan selama 12 jam. Sementara itu, rawatan selama 24 jam menunjukkan 95.11% kelangsungan sel dalam kumpulan rawatan kawalan manakala 92.34% dalam kumpulan yang dirawat. Morfologi juga menunjukkan sel *'apoptotic'* diperhatikan lebih banyak dalam

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rawatan berbanding kumpulan rawatan kawalan. Walaupun hasilnya tidak ketara, tetapi ia memberikan gambaran yang lebih baik tentang kesan bacaan Ruqyah Shar'iyyah pada sel-sel kanser payudara. Kajian ini mengesyorkan meningkatkan jangka masa rawatan untuk mendapatkan hasil yang lebih ketara.
Kata kunci: 'Apoptotic',Proliferasi , Ruqyah Shar'iyyah, Turunan sel MCF-7, Sel

Introduction

Breast cancer is a critical health problem that worries both developed and developing countries. The World Health Organization (WHO) reported that there were approximately 2.3 million women diagnosed with breast cancer followed by 685,000 deaths worldwide in 2020, totalling up to 7.8 million women alive who were diagnosed with breast cancer in the past five years. In Malaysia, it is reported that among 48,639 new cancer cases, breast cancer is in the lead accounting for 17.3% or 8 418 cases and all is diagnosed in women (GLOBOCAN, 2020) and 3,503 deaths into the data in 2020 making it as one of the major health concerns that needs to be addressed and treated properly. According to Malaysia National Cancer Registry (MNCR), the incidence of Malaysian women acquiring breast cancer keeps increasing as shown in the 2012 – 2016 report compared to 2007 – 2011 report, accounting for 21,634 cases and 18,206 cases respectively.

There are various factors that cause the high incidence of breast cancer such as reproductive and hormonal factors as well as lifestyle factors. Besides, as more detection and mammographic screening made available to the general public, it leads to increased discovery of breast cancer (Sung et al., 2021). Noteworthy, gene mutation also plays an important role in breast cancer development especially among families with breast cancer history. These genes include BRCA1, BRCA2, TP53, and CHEK2 (Feng et al., 2018). Many studies have demonstrated putative expressed genes in related to breast cancer development. SOX2 expression exhibited its correlation with tumour recurrence, tumour size and metastasis (Nik Armiza et al, 2019). There was also suggestive evidence of TFG-beta 1 polymorphisms with breast density as potential marker in breast cancer pathogenesis (Taib et al 2020; Taib et al 2018).

Currently, conventional breast cancer treatments offered by health care are surgery with the combination of adjuvant therapy such as radiotherapy, chemotherapy, targeted therapy, hormonal therapy, and immunotherapy (Nounou et al., 2015; Sun et al., 2017). Surgery stays as the primary management strategy and it includes lumpectomy, mastectomy as well as reconstructive surgery. Lumpectomy is also known as breast conserving surgery in which the malignant tumor is removed along with some healthy tissues while leaving the major part of the breast untouched as possible (Sun et al., 2017). This treatment is usually performed during initial stage of breast cancer and preceded by adjuvant therapy such as radiation therapy and chemotherapy to ensure full recovery and reduce the risk of metastasis as well as local recurrence of cancer (Dhankhar et al., 2010). Radiation therapy works by exposing cancer cells to high levels of radiation directly and together with chemotherapy, they shrink malignant tumor (Akram & Siddiqui, 2012). Some of these treatments may cause undesirable side effects that remain for months or even years after therapy has ended (Feng et al., 2018). Side effects such as hair loss, appetite loss, nausea and many more due to chemotherapy are appalling and repulsed by patients. Patients who undergo lumpectomy and radiation therapy may experience tenderness, temporary inflammation, sclerosis, changed appearance of breast, decreased sensation in the breast tissue or under the arm, soreness, itching, peeling, and/or redness, and the skin might be moist and weepy at the end of treatment (Akram & Siddiqui, 2012; Yarnold et al., 2005).

Due to these reasons, complementary and alternative medicine (CAM) is commonly practiced along with conventional treatments. In the past years, CAM is extensively practiced among breast cancer patients in Malaysia in contrast to other cancer patients (Chui et al., 2014). There are many variations of CAM such as homeopathy, chiropractic, osteopathy, traditional medicine from different ethnicities of Malaysia, and yoga but the most prominent CAM practice broadly utilized in Malaysia is Islamic spiritual healing by the Muslims (Suhami et al., 2014). These practice methods are recognized by the Ministry of Health Malaysia. Islamic spiritual healing or also termed as Ruqyah Shar'iyyah is defined as a modality that uses verses of the Qur'anic or sunnah, which is the tradition of Prophet Muhammad (peace be upon Him) in treating diseases and healing purposes by reciting Qur'anicic verses and praying for the blessings from Allah (Adynata & Idris, 2016) that has been practiced worldwide including in non-Muslim countries.

Islamic spiritual healing is practiced by using two most common different approaches which are direct Qur'anic recitation to the patients as well as the use of herbs or water (healing water) in which Qur'anic verses have been recited in advance apart from other mediums (Suhami et al., 2014). Muslims believe in the power of Qur'anic recitation based on the verses in the Holy Qur'anic mentioning about the healing

effects it brings. Such verses include Surah Isra verse 82, translated as "We send down (stage by stage) in the Qur'anic that which is a healing and a mercy to those who believe;…". Other verse is from Surah Ha Mim verse 44 where said, "…Say: it is a guide and a healing to those who believe;", and from Surah *Shu'araa* verse 80, "And when I am ill, it is He (Allah) who cures me."). Furthermore, a hadith narrated by Abu Saeed al-Khudri advocates the use of Qur'anic recitation for healing purposes (Sahih al Bukhari,no.hadith : 2276)

Majority of Muslims view Islamic healing as a mean to improve emotional and spiritual well-being rather than curative options. For example, Muslim Iranians practice Islamic healing to cope with the disease symptoms, anxiety-provoking medical procedures, illness experiences, as well as to withstand physical and psychological crises triggered by the diagnosis and subsequent cancer treatment (Suhami et al., 2014). This is supported by Zulkurnaini and colleagues (2012) stating that listening to Qur'anic recitation aids in releasing stress and gains spiritual relaxation. It came to this conclusion after observing the difference in alpha brainwave, which is associated with relaxation, between Qur'anic recitation and classical music in which the former showed better impact (Zulkurnaini et al., 2012). Similarly, Tumiran and his colleagues (2013) also discovered that alpha brainwaves are highly produced when listening to Qur'anic and helped to stabilize psychological behaviour in humans. Other than that, listening to Qur'anic recitation not only affects the brain but the body in positive way as well as lessening the physical pain post-surgery (Hashim et al., 2017).

In the cancer context, it is discovered that Islamic spiritual healing radiates positive impacts on cancer patients undergoing chemotherapy by reducing physical and spiritual distress (Rezaei et al., 2008). To date, many literatures discuss about the effects of direct Qur'anic recitation on physical and spiritual context such as mentioned before. Only few articles reported its influence on cell cultures especially on cancer cell lines. Mehrafsar and Mokhtari (2018) studied the effect of exposure to Qur'anic recitation on cell viability, cell migration, and BCL2L12 gene expression of human prostate adenocarcinoma cell line in culture. Based on this study, exposure to Qur'anic recitation is strongly suggested to alter cell proliferation via the down regulation of the gene and migration of PC-3 cells. Hence, the effectiveness of *Ruqyah Shar'iyyah* on breast cancer cell lines is being studied in this project.

Materials and Methods

Culturing Cells

The human breast cancer cell line (MCF-7) was cultured in Roswell Park Memorial Institute (RPMI) 1640 medium, supplemented with 10% fetal bovine serum (FBS). Cell line was maintained at 37°C in an incubator with humidified atmosphere of 5% CO2. The culture was observed daily under an inverted microscope to check for its growth and confirm the absence of bacterial and fungal contaminations.

Treatment Procedure (The Exposure of Islamic Spiritual Healing)

Treatment session was carried out in CO2 incubator to ensure controlled in-vitro environment for optimum cell culture growth throughout the procedure. MCF-7 cells were divided into two groups: untreated and treated group. Cells in the untreated group served as control and were not exposed to Qur'anic recitation. The treated group was exposed to Qur'anic recitation for 12 hours and 24 hours using sound level meter at 50-60 decibel. The plates containing the cells were placed inside a sterile chamber with four speakers at each corner to avoid any other inference factors. During the treatment sessions, a compilation of several Qur'anic verses from the Qur'anic was played by the speakers. The selection of Qur'anic verses was based on the several well-established Islamic healers who were used to breast cancer treatment. The Qur'anic verses used for the treatment are as follows in Table 1 according to the category either as general Qur'anic verses or specific Qur'anic verses. General verses were first introduced in the treatment, followed by the specific verses for the breast cancer treatment.

Table 1: Series of Qur'anic verses used in *Ruqyah Shar'iyyah*

Surah	**Verses**	**Category**	***Surah***	**Verses**	**Categ-ory**
Fatiha	1-7	General	*Nahl*	66-74	Specific
Baqarah (ayat kursi)	255	General	*Anbiya*	82-90	Specific
Hashr	21-24	General	*Hajj*	40-55	Specific
Ikhlas	1-4	General	*Ra'ad*	16-28	Specific
Falaq	1-5	General	*Kahf*	9-26	Specific
Nas	1-6	General	*Mu'minun*	63-77	Specific
Maida	97-105	Specific	*Mu'minun*	93-100	Specific

Cell Proliferation Assay

The effect of Islamic spiritual healing on the proliferation of MCF-7 cell line was assessed using

Trypan blue exclusion assay. Briefly, MCF-7 cells were seeded in 6-well plates at a density of 3x104cells/ml, followed by incubation for 12 hours and 24 hours at 37°C in an incubator with humidified atmosphere of 5% CO2. After overnight incubation, the cells were exposed to Islamic spiritual healing for 12 hours and 24 hours. The cells without the treatment of Islamic spiritual healing served as control group. After treatment, MCF-7 cells were trypsinized and incubated in Trypan blue dye (0.2%) for 5 minutes at room temperature. A 20 mL aliquot was removed and placed on a Neubauer hemacytometer. The number of viable and non-viable cells was counted under a microscope.

Morphological Evaluation using Phase-Contrast Microscopy

Morphological evaluation following the exposure of Islamic spiritual healing on MCF-7 cells was performed using phase-contrast microscopy. The cells were observed using an inverted microscope. Changes in cell morphology of treated cells were imaged at x100 magnification using inverted phase contrast microscope (Nikon Instruments, Tokyo, Japan) and were compared to the control group.

Results

Effect on cell viability

Cell viability was observed in both control and treated groups with Qur'anic recitation. The treatment was run for 12 hours and 24 hours in a triplicate experimental assay. The recorded data is listed in table below. Based on Table 2 and Figure 1, when comparing between the exposure time to treatment, it is clear that mean cell viability of control groups in both time points (12 hours and 24 hours) are slightly higher than treated groups. After 12 hours treatment, control groups yield 95.69% of mean cell viability compared to treated groups which is at 93.54%. Meanwhile, after 24 hours treatment, 95.11% mean cell viability is observed in control groups and 92.34% in treated groups.

Time	Group	Experiment	Cell viability (%)			Mean cell viability (%)	Std. deviation
			Replicate 1	Replicate 2	Replicate 3		
12h	Control	1	96.25	94.74	97.40	95.69	1.535
		2	97.73	95.65	93.83		
		3	96.34	93.15	96.15		
	Treated	1	94.59	94.44	91.55	93.54	1.857
		2	90.70	94.05	92.13		
		3	96.51	95.00	92.86		
24h	Control	1	97.12	95.50	95.15	95.11	1.466
		2	93.58	97.48	94.69		
		3	93.39	93.75	95.33		
	Treated	1	93.20	92.00	92.52	92.34	0.916
		2	91.07	93.16	92.17		
		3	92.31	90.99	93.64		

Table 2: Summary for mean cell viability (%) for 12-hour and 24-hour treatment

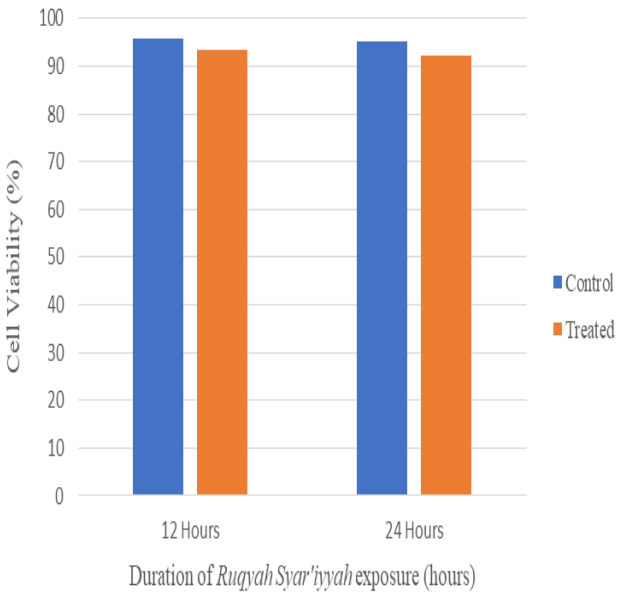

Figure 1: Cell viability (%) of MCF-7 cells after being treated with Ruqyah Shar'iyyah recitation for 12 and 24 hours. The data represents the mean of three independent experiments done in triplicates (n=12).

Effect on cell morphology

Result of morphological evaluation on MCF-7 cells in 12- and 24 hours post treatment with *Ruqyah Shar'iyyah* recitation using phase-contrast microscopy. Images from phase-contrast microscopy showed apoptotic activities after being treated with *Ruqyah Shar'iyyah* for 12 and 24 hours. Common features of apoptotic cells can be observed in both treatment times such as membrane blebbing, cell shrinkage, pyknotic bodies, and karyorrhexis. Comparing between 12- and 24-hours treatment, the latter seemed to have more apoptotic cells with

aforementioned characteristics. The common features of halo and shade-off contrast patterns observed in phase contrast microscopy are also present. The aforementioned cell morphology is exhibited in Figure 2.

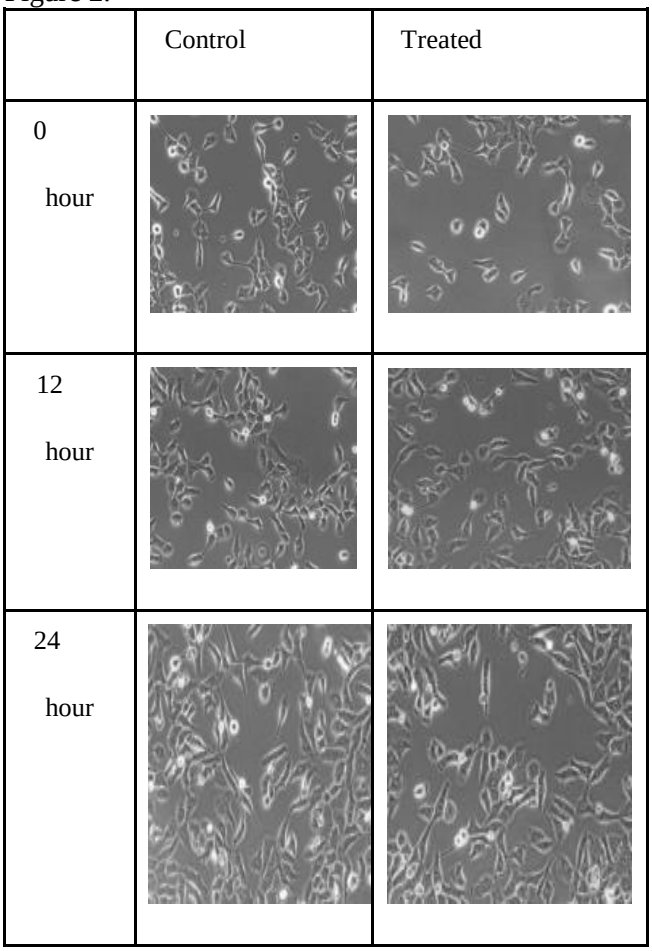

Figure 2: Morphology analysis by phase-contrast microscopy of MCF-7 cells treated with *Ruqyah Shar'iyyah* recitation for 12- and 24 hours. All images were obtained at a magnification of x100.

Discussion

Breast cancer is a worldwide health concern and the most common cancer found in women globally. In 2020, more than two million women are diagnosed with breast cancer and in Malaysia with approximately 1 in 19 women is at risk of developing breast cancer. In a study by Zulkipli et al. (2018), it is revealed that around one-third of breast cancer patients in Malaysia used contemporary and alternative medicine (CAM) before any conventional treatment and the most common type of CAM used is dietary supplementation and spiritual therapies. Even though CAM efficacy in breast cancer has not been clearly proven, many women are convinced that CAM can improve their quality of life by treating their condition "naturally". Chui et al. (2014) also stated high prevalence of CAM practices by breast cancer patients in Malaysia which is in the range from 51.0 to 88.3%. CAM practiced in Malaysia reflects the diverse population of Malay, Chinese, Indian and indigenous cultures. Ethnic Malays represent the majority of the population (67.4%), followed by Chinese (24.6%), Indian (7.3%), and other local ethnic populations (0.7%) (Chui et al., 2014). The treatments for breast cancer vary from conventional medicine to complementary and alternative medicine (CAM) such as *Ruqyah Shar'iyyah* in which its effects on MCF-7 breast cancer cells were being studied in this project.

Based on the result of trypan blue exclusion assay, the cell viability between control and treatment groups depicted slight noticeable differences in percentage. Cells treated with *Ruqyah Shar'iyyah* verses are less viable compared to control groups in both time exposures. After 12 hours of exposure to *Ruqyah Shar'iyyah* verses, the cell viability of treatment group is 93.54%, which is lesser than control group which is at 95.69%. Meanwhile, after 24 hours of treatment, the group yields 92.34% of viable cells compared to control group that results in 95.11% of viable cells. Comparing both treatment groups in the context of treatment duration, cancer cells treated with *Ruqyah Shar'iyyah* longer produced better result as reflected in 24 hour's exposure compared to 12 hours exposure, accounting for 92.34% and 93.54% respectively. This could be interpreted as more apoptotic activity present in 24 hours exposure group. Though the differences are minimal and insignificant, it gives better insight on understanding the effects of *Ruqyah Shar'iyyah* verses on cancer cells as well as the idea that prolonged and consistent recitation is highly necessary to enhance the result according to this study design. This suggestion is in line with Syed Bidin et al. (2020) that recommended practicing *Ruqyah Shar'iyyah* verses as added therapy to conventional medicine. The notion to practice both Qur'anic recitation and conventional medicine is supported by Mehrafsar & Mokhtari (2018) who studied the effects of Qur'anic recitation and cisplatin, which is an antineoplastic drug, on prostate cancer cells. The study resulted in significant effect in cancer cells treated with both treatments compared to treat with cisplatin only (Mehrafsar & Mokhtari, 2018). Additionally, the Qur'anic recitation possess therapeutic effects in which it aids the wound healing as suggested by Hashim et al. (2016) in his study about the potential effects of Qur'anic recitation on the proliferation of normal chondrocytes. The study identified the healing properties of Qur'anic recitation in wound healing process by increasing cell proliferation in a short time to recover the wounded

site (Hashim et al., 2016). This evidence revealed the opposition effect for different cell type and the Qur'anic verses used in the study. Our study used general verses and followed by specific verses to destroy the breast cancer cells as being practically performed by well-established Islamic healers to breast cancer patients as listed in Table 1.

The cell death or apoptosis is exhibited by its cellular changes. According to Ziegler & Groscurth (2004), in early necrotic process, the cell membrane becomes permeable. Additionally, pyknotic and fragmented nuclei are uncommon features in necrosis. Galluzi et al. (2007) also provided the distinct features for autophagy and mitotic catastrophe in which they are differentiated through the accumulation cytoplasmic vacuoles and membranes in autophagy as well as multinucleation in mitotic catastrophe.

The morphological features as displayed in the result of phase-contrast microscopy in this study are consistent with apoptotic activities. Apoptotic cells share typical common characteristics observed in both nucleus and cell membrane. Nuclear changes are hallmarked by nuclear condensation that begins peripherally along the nuclear membrane to form a crescent or ring like structure. In later stage of apoptosis, the nucleus condenses further before breaks up inside the cell, all while keeping the nuclear membrane intact. This process is specifically known as karyorrhexis. In addition, pyknotic bodies of condensed chromatin are formed as well as chromatin cleavage. Meanwhile, the typical apoptotic features that can be seen in cellular membrane are the protrusion of plasma membrane called as blebbing. Over time, the blebs separate to form apoptotic bodies that are densely packed with cellular organelles as an alternative to minimize spillage of internal contents of the dead cells to its environment. During early apoptosis, dead cells generally lose contact with neighboring and adjacent cells as well as cellular adhesion to substrate. Apoptotic cells also appear to be detached from the surface of tissue culture dishes plate and floating in culture medium. Additionally, the membranes and organelles such as mitochondria are well preserved in early apoptotic activity (Syed Abdul Rahman et al., 2013; Ziegler & Groscurth, 2004). The process of apoptosis was clearly seen on the breast cancer cell line treated with Qur'anic recitation in this study as described aforementioned above.

Huh and his colleagues proposed apoptosis detection using phase-contrast microscopy recommended for each bright cell area should be observed to decide whether its formation is followed by the decrease of dark area and/or the increase of bright area, in which these respective features represent cell shrinkage and brightness increase (Huh et al., 2012). Based on this proposition as well as aforementioned morphological features, it is clear that the cells did undergo apoptosis upon being treated with Qur'anic recitation. It is difficult to distinguish the significance of the results based on visual representation only, but in conjunction with cell viability assay results, it is suggested that there were slight positive changes between control and treatment groups.

In regards to the treatment exposure using speaker with sound level meter to standardize the optimized frequency without inference factors during the treatment procedure, the sound had been set at 50-60 decibels in a chamber. Moreover, the direct recitation might induce contamination to the harvested cell lines, different level of sounds that could not be controlled and other parameters should be taken into account which might affect the data. Combriat et al. (2020) suggested using an anechoic chamber that is designed to mimic free field conditions to minimize external factors such as noise contamination and inconsistencies of sound. Sound is defined as compressed waves produced by vibrating air molecules (Purves et al., 2001). It is considered as a mechanical wave due to its transportation through the medium via particle interaction (Kothari, 2017). Sound waves can be further categorized into three different classes: infrasound (10-4– 20 Hz), audible sound (20 – 104 Hz), and ultrasound (2 x 104 – 1012 Hz) with the latter is widely used in clinical settings such as in diagnosis and therapy (Lestard et al., 2013).

There are many factors to consider when using sound as the medium such as the type, amplitude, pitch, frequency and other external causes that can influence the alteration of the cells. For example, high sound frequency agitates cells compared to low sound frequency that promote relaxation (Norris, 2011). Moreover, different frequencies affect cells differently. For instances, human gingival fibroblasts changed its proliferation rate at 261 Hz depending on amplitude and exposure time while E. coli bacteria increased its proliferation rate at 1, 5 and 10 kHz under normal condition (Jones et al., 2000; Shaobin et al., 2010). Therefore, it is recommended to experiment around the sound properties to optimize the study.

The biological effects of sound on cell cultures have been vastly studied via various forms such as single-frequency sound stimuli, different genres of music, voice from an actor and Qur'anic recitation. A systematic review on this topic by Combriat et al. (2020) has gathered 12 meaningful studies with varying source of sound, experimental setups, cell

types, and outcomes. To summarize, the effects of sound on different types of cells include increasing colony-forming and growth rate as seen in bacteria and yeast cell studies. In mammal cells, sound showed frequency-dependent effects where lower sound frequency induced cell migration in contrast to higher sound frequency that resulted in opposite effect on cell migration. Hashim et al. (2017) also reviewed various studies regarding the effects of sound on health in general, including both physical health and alterations in cells, and concluded that sound was indeed a field to be explored further as an endeavour to come up with alternative healing medium.

Since this study was performed only up until 24 hours of exposure time to Qur'anic recitation, the results obtained are not significant enough to draw a concise conclusion. Therefore, it is postulated that the longer treatment times yield better and significant results as suggested by (Syed Bidin et al., 2020). Therefore, future study on this topic should extend the exposure time such as up until 72 or 96 hours for better perception on the effects of Ruqyah Shar'iyyah on cancer cells as suggested by several studies.

The ability of sound waves to travel through different mediums which are solids, liquid, and gas with different speeds depending on the mediums is taken advantage of in this topic. The reason being sound travels faster in liquid or solid mediums compared to gas. Since the human body is made up of more than 70% water, sound can simply pass through the body as water is a good conductor for sound, thus causing a reaction among the cells (Combriat et al., 2020; Mehrafsar & Mokhtari, 2018). Due to this principle, the direct Qur'anic recitation may be replaced with water infused with Ruqyah Shar'iyyah verses to observe any correlation between different medium and its effects on cancer cells.

In conclusion, complementary medicine is intended to alleviate side effects of breast cancer or improve quality of life and should not be taken as a replacement to conventional medicine. Since Islamic spiritual healing is widely practiced in Malaysia especially among Muslim cancer patients, this study was aimed to disclose the effectiveness of Islamic spiritual healing specifically *Ruqyah Shar'iyyah* as a breast cancer treatment by investigating the proliferation and apoptosis of MCF-7 breast cancer cell line.

Based on the results attained, *Ruqyah Shar'iyyah* is a promising non-invasive treatment to be practiced by breast cancer patients along with conventional medicine such as surgery, radiotherapy, and chemotherapy. This is due to the apoptotic activities exhibited by the cells after being treated with *Ruqyah Shar'iyyah* verses compared to control groups. The breast cancer cells underwent the cell death under the treatment as showed by the cellular changes due to the apoptotic activity. Though the differences between control and treatment groups are minimal and insignificant, it is undeniable that the treatment groups did show positive effects, especially when compared across time exposure. It can be concluded longer treatment duration yields better result. Due to this reason, it is recommended to practice Qur'anic recitation consistently as supplementary therapy along with conventional medicine to improve the condition of a breast cancer patient.

However, since this study is one of the few that observes the direct effects of Qur'anic recitation on cancer cells, more incoming studies are required to attain deeper understanding and comprehension of this phenomena such as gene expression analysis to evaluate the role of potential differentially expressed genes that have been modulated by the Qur'anicic verses in providing scientific evidence. In addition, it is worth to further investigate by using the water as a medium that might confer better effect. The vibration due to wavelength of the sounds will penetrate and change the molecule of the water exhibit more effectiveness in killing the cancer cells.

Conflict of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this article.

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