

## Is Our Medicine Lawful (*Halal*)?

<sup>1</sup>A. Asmak, <sup>1</sup>S. Fatimah, <sup>1</sup>I. Huzaimah, <sup>2</sup>A.H. Khuriah and <sup>1</sup>A.M. Siti Khadijah

<sup>1</sup>Academy of Contemporary Islamic Studies (ACIS) Universiti Teknologi MARA,  
Shah Alam Selangor, Malaysia

<sup>2</sup>Faculty of Pharmacy Universiti Teknologi MARA, Puncak Alam Selangor, Malaysia

---

**Abstract:** Health is the ultimate gift from Allah SWT. Therefore, taking care of our health is a priority. When someone is sick, he or she needs to search for medication as an effort to relieve the pain. Nevertheless, arguments had been raised by Muslims about the permissibility and lawfulness (*halal*) of our medication from the Islamic point of view. Abundance of information had been lingering around questioning about the *halal* status of our medication that makes many Muslims in dilemma. Therefore, this paper aimed to present the general *Shariah* guidelines on the *halal* status of common medicine used by Muslims in Malaysia. The paper also discussed several issues related to *halal* medicine and medication intake. The paper proposed for the respective parties and authorities to take *halal* issue seriously in order to safeguard the welfare and interest of the public.

**Key words:** Halal Medication • Al-Dharurah • Fatwa Committee Of The National Council

---

### INTRODUCTION

Health is the most precious gift from Allah SWT. Therefore, taking care of our health is a priority. People will live happily in this world when they are healthy, peaceful and have fulfilled their basic needs. That is why the Prophet (Peace be upon him) had reminded the Muslims to take advantage of five crucial things in life before they are gone. The five things are; make full use of young age before getting old, benefit our healthy body before getting sick, be generous while we are rich before becoming poor and leading good life before death.

While having a good untroubled life is a dream of everyone, Allah the Almighty would some time put a test on the life of His servant in the form of disease. It has some wisdom as to expiate, to repent, to test the patience and to elevate the status of the individuals. Therefore, it is our responsibility to find the treatment for healing. An issue arises when many consumers bought their own medicines from drugstore without prescription from a doctor after experiencing mild illness such as allergies, coughing, flu, abdominal pain and many more. As study showed, many consumers were likely to purchase non-prescribed medicine that they had used to buy previously [1]. On top of that, many were still unaware

about the risk and benefit of the medicine as they have little ability to understand the medicine information written on the label [2, 3]. This had caused many, particularly the ignorant public, to buy medicine which are not suitable and may even non *halal* to them. So, it is important for particularly Muslim consumers to know the necessary medications and its ingredients whether it is categorized as *halal* or non *halal*. Searching for *halal* is the duty of every Muslim as dictated by Islam [4] and it is not only limited for food and drink but also covers the entire life of a Muslim including medicine or pharmaceutical products. This is the dilemma that the Muslim community faces today, the turmoil in the *halal* and *haram* in food industry, health care, medicines and pharmaceutical products.

This concept paper delved into the matter by focusing on the medicine and medication intake from the Islamic points of view. General guidelines on the matter are presented to give an overview on the demarcation between *halal* and non *halal* medicine.

**Medication Intake According to Islamic Law:** Islam had ruled that anything harmful should be prevented and avoided by all means. Hence, preventing oneself from being inflicted by any kind of illness is very much

recommended as a way to avoid harm to the body and soul. Nevertheless, one may not always free from getting sick due to many factors even when precautionary measures had been taken. Therefore, taking medication is a way to recover oneself from the pain. In this regard, Muslim scholars had their views on the rulings relating to medication intake. The majority scholars comprising of scholars mainly from Hanafi, Maliki and Hanbali permit medication intake and rule it as *harus* (Permissible). On the other hand, scholars of Shafi'i and al-Kasani from Hanafi school viewed it as obligatory (*Wajib*) and not permissible (*Harus*). Their argument was based on the saying of the Prophet which means, "Allah the Almighty down and cure diseases and made for each disease cure, then seek medication and do not seek treatment with something that is illegal" (Hadith narrated by Abu Dawood) [5]. One's intake of medication would become *haram* (Prohibited) when he strongly believed that the healing is due to its intake and not from the will of Almighty Allah [6].

Therefore, in general we should seek for medication whenever we are inflicted by any illness or disease and we should not just rely on our fate and destiny. This is in line with the saying of the Prophet: "Allah will not cause disease only after He created the cure, so you should be medicated" (Narrated by Ibn Majah) [7]. Further, the Prophet said: "I was in the presence of Allah, all of a sudden some of the Arab Bedouin came and they said, 'Yes Rasulullah, are we allowed to seek treatment? He said, 'O servants of Allah, for Allah berubatlillah not put any disease but He put the medicine for him except one only! They ask, Is that so the messenger? 'He said,' old diseases' (Narrated by Bukhari) [8].

Medicine is a substance used to treat, cure or prevent diseases in humans and at the same time improving health [6]. It can be used in various ways and forms and can be taken orally or applied externally in various ways such as through the rectum (Suppository), vagina (Pessaries), injections, implanted beneath the skin, rubbed / lubricated and as such. All these are done with one purpose that is to heal oneself from disease. Traditionally, healing process could be attained by way of abstinence such as fasting, prayer, cupping, vomiting and a combination of several methods. Indeed, Islam allows methods of spells that do not conflict with Islamic law.

**Halal Medicine:** Halal medicines must comply with these attributes [9]: (a) Sources – the medicine does not contain substances from prohibited animals such as swine or animals which are not slaughtered according to Islamic law. Medicine made from plants, soil, water, mineral resources and micro-organisms on land and in water are

considered *halal* and permissible except those which are poisonous and dangerous. Similarly, the medicine substance produced synthetically is *halal* except toxic, hazardous and mixed with unclean materials; (b) methods of preparing, processing, manufacturing or storing should be free from unclean elements or filth; (c) the usage will not bring harmful effects in future such toxic content; (d) based on the concept of *halalan toyyiba* therefore, the aspect of hygiene in the preparation and handling of drugs should be concerned by all parties. Cleanliness means free from filth, dirt, germs and other non-halal substances such as liquor that can cause diseases and it covers personal hygiene, clothing, equipment and premises of the medication process. It is intended to ensure that the medication produced bring no harm to consumers; (e) the certification from a trusted and honest Muslim doctor during the inspection; (h) the medication does not contain ingredients which are not specified in the formulation and affectively proven to be used and; (i) the treatment is not based on magic, cults and superstitions or used of a prohibited substance or medium as they are contradict to Islamic law. This is clearly mentioned in the Qur'an; "And that persons from among men used to seek refuge with persons from among jinn, so they increased them in wrongdoing". (al-Jinn, 17: 6)

**Dharurah Concepts in Medicine:** Dharurah is an Arabic term that can be translated as the state of *dharar* or harmful whereby a person has to do some desperate acts in order to safeguard his life essentials. Islam strongly emphasized the importance of safeguarding five essentials in life namely religion, life, intelligence, progeny and wealth. Anything that may cause harm to any of the five should be avoided or prevented and protecting them is considered as *jihad* (Sacrifice and struggle) [10].

Some of the scholars' view about *dharurah* in medication intake are; (i) It is a state of emergency where one is fear of harm based on certainty or strong assumptions (*Zhan*). It is not required for someone to wait until harm or death befallen but enough in relying on the strong feeling of its possible occurrence. (ii) It is an emergency situation that happen to someone in the form of harmful things or acts that causes injury to one's essentials of life. In such a situation, one is allowed to do things which are prohibited by Islam [11]. This facility of easeness (*Rukhsah*) is provisioned in Islamic law as a way to ease the burden or hardship that inflict someone. The Islamic law is universal and flexible that respond to the problem of human nature. In time of emergency (*Dharurah*) shariah provides certain flexibility to the extend of allowing what is not allowed in Islam.

In this regard, a critically ill person is allowed to take medication made from prohibited elements such as porcine, liquor or harmful drug in order to save his life. This is in line with the verse of the Qur'an, which means: "Verily forbidden to you dead, blood, pork and anything slaughtered for other than Allah. But there are those who have no inclination and without overstep the bounds, it is no sin on him. Verily, Allah is Oft-Forgiving, Most Merciful." (2: 173) [12]. In conjunction to this, the Islamic legal maxim clearly states that necessity renders prohibited things permissible (Al-dharurah tubih manzurah). However, the allowance of this facility is subject to certain limitations namely (a) the emergency situation is clear and no permissible alternative is available, (b) the consumption of the prohibited elements should be limited only to its estimated proportion and (c) the thing permitted on account of the excuse become unlawful on the cessation of the excuse [10].

**Unlawful Elements in Medication:** Islam had given guidelines on the unlawful elements used in medication. Among the unlawful elements in medications include;

**Carcass:** It is not allowed to use carcass or dead animals which are not slaughtered according to Islamic law for the purpose of treatment. Islam had reminded that getting treatment using illegal substances is bad and shameful based on commonsense and legislation. Thus, Muslims are forbidden to find a cure for the disease through the use of a banned substance, perhaps illegal substances were found effectively for physical disease, but it will produce toxins in soul. However, Muslim is allowed to use animal and internal organ that is halal to be eaten and slaughtered according to Islamic rules for medication [13].

**Liquor:** The prohibition of liquor is clearly presented in the word of Almighty Allah which means "O ye who believe! Intoxicants, gambling, idolatry and vote divination by arrows, are (All) dirty (Abomination) of the act of the devil, so that by avoiding them you may be successful." (5: 90) [12]. Besides, hadith of the Prophet means: "We traveled to the people of the Scripture (While passing in the area), they cook pork in their pot and drinking wine through their drinking utensils. Messenger of Allah said: "If you can get the (Equipment) to another, put on the other, but if nothing else, then wash first with water, then eat and drink it." (Hadith narrated by Abu Dawood) [5]. The instructions of the Prophet to wash their liquor containers and allow to exploit its container, means that liqueur is unclean including the leftover on the container. The majority of scholars also viewed that it is

illegal to use in medicine based on the hadith above. This is explained further by Thariq bin Suwaid al Ju'f'iyyi, he once asked the Prophet about wine making. He forbade the making. Thariq then said: I make wine exclusively for drugs. The Prophet said: 'He did not make healing for you from the things that are forbidden to you. Hadith naratted by Muslim [14]. Ibn Taymiyyah opined that taking medication that contained liquor is unlawful based on the clear text of the Prophet and this is also the view of the majority scholars [15]. Nevertheless, majority scholars viewed that taking liquor as medication is allowed in the state of dharurah.

**Alcohol:** Alcohol is an organic compound that contains hydroxyl functional group. Alcohol plays a major role in the science industry as a reagent or solvent. It is extensively used in the manufacturing of conventional medicines, perfumes and in the manufacturing of vanilla essence. Ethanol derived from alcohol compound is also used as an antiseptic, especially at the outer skin before the injection is given. Furthermore, alcohol is also used as an ingredient in soaps and hand sanitizers because of its ability to kill most bacterial strains. Alcohol can be produced either traditionally through fermentation or chemically in the form of by-products from petroleum processes known as ethanol or ethyl alcohol. In medicine, alcohol is used as an antiseptic and solvent. Methanol is known as methyl alcohol, a material that is highly toxic [13].

The four schools of thought namely Hanafi, Maliki, Shafi'i and Hanbali unanimously agreed that alcohol derived from fermentation is unlawful as it falls under the prohibited *khamr* (Liquor). High percentage of ethanol content in liquor causes the imbalance of human body and nervous system. On the other hand, Muslim scholars are in dispute over the status of chemically produced alcohol. Contemporary scholars such as Al Qaradhawi viewed that chemically processed alcohol is allowed to be used externally [16]. Some Muslim countries like Malaysia and Saudi Arabia decided to agree to this ruling. Hence, benzyl alcohol, methyl alcohol and polyethylene alcohol that are used in medicines can be considered legitimate and useable according to the permitted amount.

Some other scholars stick to the opinion that it is equally forbidden, based on the verse of the Qur'an which means; "O ye who believe! Intoxicants, gambling, idolatry and witchcraft, fortune, were unclean devil act, so you must all avoid it, that ye may be successful." (5: 90) [12]. The verse implied that alcohol is forbidden irrespective of the use. The understanding is based on the words "...and ye shall all keep away." (5: 90) [12]

Other contemporary scholar Al-Sheikh Muhammad Rashid Rida viewed [17] that alcohol is important in industry. Banning the usage for the Muslims will hinder the development and application of knowledge in especially chemistry, pharmacy, medicine and manufacturing. Medically, the banning may prolong the suffering of pain for the injured patients and may even lead to death. As some of the medicine is mixed with alcohol, scholars viewed that it does not make the medicine unlawful if the mixture gives little effect. In this regard, Ibn al-Qudamah said: "Flour kneaded together with wine and toasted into bread and became as a meal (Person) are not punished with Had ruling (Specified ruling on drunk person), because baking or cooking process would evaporate the chemical parts of the alcohol hence harmless" [18].

In the same regard, Fatwa Committee of the National Council Malaysia in their meeting on 11-12th April 1984 had clearly ruled that alcohol derived from non-liquor process is non filth. Therefore, its usage as ingredients in the production of medicine and other pharmaceutical products is lawful and hence consumable [19].

**Drugs:** The use of drug as medicine is beneficial as it is very effective in the short run, but it can bring great harm to the patient in the long run. The long-term effects include kidney and liver failure. Excessive use of drugs can bring sudden death [20]. That is why its usage can only be prescribed by certain bodies through strict supervision and monitoring. Otherwise, it is considered as illegal and unlawful. The intake of prescription drug must be on the basis of emergency and a temporary solution to the diseases that have not yet found of the cure. The types of drugs commonly used in medicine are: (a) Narcotic substances from poppy or synthetic used as painkillers for patients with severe acute heart attack, cancer or pain during childbirth. The examples are morphine and *pethidine*, (b) Cannabis or marijuana from trees of cannabis *indica* and cannabis *sativa* used as pain relievers, (c) Cocaine used to anesthetize and stop the bleeding. The immediate effect is disillusion and its overdose can cause epilepsy and death due to suffocation.

**Gelatine:** Gelatine is a substance obtained from hydrolysis of the partial collagen derived from protein, bones, tendons and skin of animals. It is estimated that 44 percent of gelatine is from pigs, 28 percent from cattle, 27 percent from animal bones and 1 percent from other sources. Gelatin is widely used in the food industry as

one of the basic ingredients. Gelatin is also used to make sweets, jelly and ice cream. The gelatin from plants is similar to animal gelatin in terms of functions and it can be consumed from wheat gluten or other grains [13]. In fact, technological advancement had managed to produce herbal halal soft gel from plants to replace gelatin [21, 22]. Therefore, gelatin can also be derived from plants. The main argument that has been raised is gelatin from animal sources. This kind of gelatin may become unlawful (*Haram*) if it is derived from prohibited animal such as swine, or animals which are not slaughtered according to Islam. Any food or medicine made from this gelatin mix is also considered unlawful (*Haram*). Among the generic names for gelatine in product's label are bovine gelatine, gum base, emulsifier and e-code gelatine (e441). Nowadays, gelatine is essential in food and beverages industry, pharmaceutical products in the form of capsules, tablets, fibre of serum and injections, in cosmetic industry as well as other industries include images, production of paper, boxes and as such.

**Examples of Unlawful Medicine:** (i) Insulin; there are several types of insulin such as regular human insulin (RHI), rapid-acting insulin analogues (RAAs), neutral protamine insulin and long-acting analoges which are available for diabetic patients to control the glucose levels in both type I and type 2 diabetes mellitus [23]. Insulin was originally from the extract of dog pancreas and today it can be derived from bovine (Cattle) [24], porcine (Pig) [25] or recombinant of human insulin [26]. Nowadays, there is widespread use of recombinant human insulin which is produced through genetic engineering methods that originated from the pig insulin [26]. (ii) Heparin; Heparin is an anticoagulant used to prevent the formation of blood clot to ease blood circulation. Heparin is given through injection and is widely used in cardiac surgery and cardiovascular disease. Heparin is produced from pig intestines and cow lungs [27]. (iii) Porcine *trypsin*; *Trypsin* is derived from pork sources and used in a variety of medical and scientific applications as well as in the food processing industry [28]. In addition, trypsin is used in the production of insulin which is widely used to treat diabetes (Diabetes mellitus) [29]. (iv) Low Molecular Weight Heparin (HBMR). Fatwa Committee of the National Council for Islamic Religious Affairs, Malaysia on its 87<sup>th</sup> meeting (23 and 25 June 2009) ruled that HBMR Fraxiparine Clexane is unlawful since there is an alternative medicine known as Arixtra. This medicine is produced from clean sources and has the same function and effect as Clexane and Fraxiparine [30].

**Issues Relating to Halal Medication:** Lack of Awareness; Patients and consumers generally are less aware about the importance of *halalan toyyiba* (Permissible and wholesome) in medicine. It is important for patients to know their medication intake particularly on the lawfulness of the medicine in the sight of shariah. Patients also have the right to obtain adequate and accurate information about the drugs that they take. Nevertheless, study show that 50 percent of patients do not take medicines correctly [13]. The study also indicated that 50 percent of the Muslims patients believe that physicians who treat them are aware about the rules of their religion in medication. In other words, they just give their trust to the physicians who treat them. Nonetheless, it is quite appealing as the study found that 42 percent of patients will not take any medication if they are not sure the status of halal medicines and 58 percent mentions that they will stop taking drugs if found as illegal drug [13]. Increasing consumer awareness is important in order for them to better understand the risk and benefit of the medication and at the same enable them to self-assess medicine information in the label [3].

**Doubtful Status of the Medicine:** Besides the status of lawfulness (*Halal*) and unlawfulness (*Haram*) of the medicines, there are also medications that fall under the category of doubtful (*Syubhah*). Gelatine-mixed medicine for example can be considered doubtful as the gelatine itself is produced from animal bones, skin or connective tissue. It is lawful only if it is produced from properly slaughtered *halal* animal. Fatwa Committee of the National Council Malaysia in 1982 decided that gelatine is *syubhah* when the sources are doubtful. However, the 8<sup>th</sup> discussion by Fatwa Committee of the National Council Malaysia on 24 September 1984 viewed that the use of gelatine in medicine is allowed in emergency cases [13]. Fortunately, the production of *halal* gelatine at present had relieved many Muslims as they have alternative to choose [22].

**Halal Certification:** Having *halal* certification on products is very important to ensure that Muslim consumers get their rights to have *halal* food and medicines which are safe and nutritious. Nevertheless, getting *halal* certification by manufacturers is still considered voluntary and non-enforceable. At the same time, pharmaceutical producers and drugstores are not confined to any limitation in selling non *halal* products. Consequently, Muslim consumers in Malaysia have no guarantee of getting *halal* medicines in the market.

It is therefore a priority for the respective bodies and agencies that regulate pharmaceutical production to call for enforcement on formulation, production and *halal* certification of each product. It would be very much welcomed for the putting of non *halal* sign to be enforced at premises or medicines which are not lawful.

#### **The Way Forward**

**The Consumers:** Muslim community should seriously concern with the medicinal materials that they consumed because it involves a question of permissibility and non-permissibility of the products. In addition, they need to aware on the safety use of the products. They also need to know their rights such as the right to obtain information, make choices, rights of expression and the right to a healthy and safety environment. Similarly, it becomes the patient's responsibility to read in detail about the content labels on medications they are taking. At present, many are still confused with the sale of medicines that contain forbidden elements in Islam as the sale is still allowed in Malaysia. In fact, the issue of porcine and other unlawful substances in medicine still persist. Therefore, extensive campaign and education on *halal* awareness to the public is needed to increase their knowledge and capability to understand the *halal* status, the risk and benefit of the medicine.

**The Authorities:** The authorities in charge of *halal* status need to be proactive in addressing the issue of *halal* pharmaceutical products. In Malaysia, the Malaysia Department of Islamic Development (JAKIM) and the States Islamic Department (JAIN) are the responsible body for issuing *halal* certifications. The list for *halal* and non-*halal* medicine and the guidelines for medication intake should be produced publicly to guide the consumers in choosing their medicine and medication intake. This matter is essential to avoid the consumers from buying medicines that are not *halal*. In addition, the authorities and media need to play their role in spreading the information of all medications that contain non-*halal* substances. The Pharmaceutical Services Division, Ministry of Health Malaysia (KMM) is also responsible for ensuring quality and safety of medicines. Currently, the ministry through the National Pharmaceutical Control Bureau (NPCB) has ordered pharmaceutical companies to be responsible for declaring and stating the ingredients used in their pharmaceutical products label. The establishment of Halal Industry Development Corporation (HDC) in 2006 and the enactment of several *halal* standards are steps forward in providing *halal* medicine

to consumers. Malaysia is ahead in the enactment of *halal* pharmaceutical standard i.e. MS 2424:2020 as general guidelines in producing pharmaceutical, vaccines and biopharmaceuticals products. In this regard, Chemical Company of Malaysia Berhad (CCM) has developed their efforts towards *halal* pharmaceutical products with the setting up of the Halal Advisory Council. Similar efforts have been taken by Halagel (M) Sdn Bhd, which acts as importer and distributor of *halal* gelatine pharmaceutical. Indeed, the introduction of Islamic Manufacturing Practice (IMP) in the community of Muslim producers is commendable. Nevertheless, the limited and equivocal contents of the IMP need to be reviewed and rectified [31].

**Medical Practitioners:** Medical practitioners particularly medical officers and pharmacists should be responsible to inform the patients if the drug given containing unlawful elements. Imparting this knowledge to patients is essential as patients are ignorant about the content and benefit of the medicine. This is particularly important as many patients and consumers at large were unfamiliar with the medicine information written on the label [2].

### CONCLUSION

Muslims must equip themselves with knowledge and information in facing any problems that involves the issue of *halal* in life. This is particularly important as the search for *halal* in all aspects of life is obligatory as dictated in Islam. Indeed, being at the forefront of research and development of *halal* medicines is highly propagated in order to fulfil the objectives of *shariah* (Maqasid *al-shariah*) in safeguarding the religion, life, intellect, progeny and wealth of the Muslims. In Malaysia, appropriate steps and measures have been taken by the respective authorities in certifying and regulating the *halal* status of medicine and pharmaceutical products. Nevertheless, there are still loopholes and setbacks that need further attention and rectification particularly on regulation and enforcement aspects. The certification of *halal* status for example should be enforced to the manufacturers and adherence to guidelines by the drugstores should be tightened so that the elements of risk and fraud can be avoided. It is also necessary for the consumers to aware of their right and responsibilities in ensuring that the medicine they consume is *halal* and beneficial. Perhaps, the consumers must be educated to take prescribed drugs and medicine in treating their illness or disease irrespective of the state. On the other side of

the coin, medical practitioners should also play their roles in disclosing the necessary information relating to the *halal* status, risk and benefit of the medicine. In short, all parties need to work together in materializing *halal* pharmaceutical products starting from the basic material up to the end of the chain. It is highly recommended that consolidation of experts in various fields, especially in pharmaceutical industry, scholars and Muslim jurists should be set up in responding to current issues that are constantly changing.

### REFERENCES

1. Ladha and Zahra, 2007. Marketing Strategy: Are Consumers Really Influenced by Brands When Purchasing Pharmaceutical Products?. *Journal of Medical Marketing: Device, Diagnostic and Pharmaceutical Marketing*, 7: 146-151
2. Michelle Koo, Ines Krass and Parisa Aslani, 2002. Consumer opinions on medicines information and factors affecting its use- an Australian experience. *International Journal of Pharmacy Practice*. 10(2): 69-145
3. Stosic, R., F. Dunagan, P. Hazel, T. Fowler and I. Adams, 2011. Responsible self-medication: perceived risks and benefits of over-the-counter analgesic use. *International Journal of Pharmacy Practice*. 19(4): 236-245
4. Azeez and Waheed, 2013. The Halal Dietary System as a Recipe for Good Health. Working Paper. Retrieved February 22, 2013. European Management University International (EMUI). <http://ssrn.com/>
5. Abu Toyiyb Muhammad Syams al-Haqal-'Azhim Abaadi, 1995. 'Aun al-Ma'bud syarh Sunan Abi Dawud ma'a syarh al-Din Ibn Qayyim al-Jawziyyah, Beirut: Dar al-Kutub al-'ilmiyyah
6. Harny Mohd Yusoff, Shamsul Kamal Abdullah, Rosediani Muhammad and Wan Nor Ainon Wan Abdullah, 2012. *Fikah Perubatan*. Kuala Lumpur: PTS Millennia Sdn. Bhd
7. Abu Abdullah Muhammad bin Yazid Al-Qarwizi, 2009. *Sunan Ibn Majah*. Jordan: Dar al-Risalah al-Alamiyah
8. Al-Bukhari, 1994. *Sahih al-Bukhari*. Translated by Muhammad Muhsin Khan 1994. Riyadh: Maktaba Dar-us-Salam
9. Roziatul Akmam binti Osman, 2012. *Ubatan Halal Dalam Industri Farmaseutikal Hari Ini: Keperluan Dan Hambatannya dalam Seminar Kemelut Pemakanan Halal*. Paper presented at Institut Kefahaman Islam Malaysia.

10. Nazih Hammad, 2004. Penggunaan Bahan-bahan Yang Haram and Najis Dalam Makanan dan Ubatan, Kuala Lumpur: Al-Hidayah Publishers.
11. Al-Zuhayly and Wahbah, 1994. Fiqh dan Perundangan Islam. Volume III. Kuala Lumpur; Dewan Bahasa dan Pustaka.
12. Abdullah Yusuf Ali, 2005. The Meaning of Holy Qur'an: Text Translation and Commentary. Kuala Lumpur: Islamic Book Trust (IBT) Kuala Lumpur.
13. Abd Rahman, 2010. Ubat daripada Sumber Babi dan Pilihan Alternative, Kuala Lumpur: H Science Solution.
14. Muslim, 1972. Sahih Muslim. Translated by Abdul Hamid Siddique Pakistan: Sh. Muhammad Ashraf.
15. Ibnu Taimiyah Majmu' al-Fatawa, vol. 24, Darul Ma'rifah Beirut, cetakan pertama, pp: 1386-1966.
16. Al-Qaradhawi and Yusuf, 1989. Halal dan Haram dalam Islam. Singapura: Pustaka Nasional Pte Ltd
17. Muhammad Rashid Rida, 1947. Tafsir al Manar. vol. 1. Kaherah: Dar al-Mannar.
18. Al- Sharbini, 1957. Mughni al-Muhtaj ila Ma'rifah Ma'ani Alfaz al-Minhaj. Beirut: Dar al- Fikr M ukhtasar Al-Fatawa Al-Misriyyah.
19. Ahmed Robin Wahab, 2004. Guidelines for the preparation of Halal Food and Goods for the Muslim Consumers, AmalMerge (M) Sdn. Bhd, Halal and Food Safety Institute.
20. Priori, G. Silvia, 1998. Exploring the Hidden Danger of Noncardiac Drugs. *Journal of Cardiovascular Electrophysiology*, 9(10): 1114-1116
21. Shikov, N. Alexander, Pozharitskaya, N. Olga, Makarov, G. Valery, Makarova and N. Marina, 2009. New Technology for Preparation of Herbal Extracts and Soft Halal Capsules on its Base. *American-Eurasian Journal of Sustainable Agriculture*, 3(2): 130-134.
22. Bharat V. Jain, M.D. Rageeb Md. Usman, Sandip R. Pawar, Naresh R Patil, Pratik J Patil and Shashikant N. Sharma, 2012. A Vegetarian Capsule: A Review. *International Journal of Pharmacy Research and Technology*, 2(3): 10-12.
23. Rys, P., O. Pankiewicz, K. Lach, A. Kwaskowski, I. Skrzekowska-Baran and M.T. Malecki, 2011. Efficacy and safety comparison of rapid-acting insulin as part and regular human insulin in the treatment of type 1 and type 2 diabetes mellitus: A systematic review. *Diabetes and Metabolism*, 37: 190-200.
24. Goswami, R., A. Jaleel and A.P. Kochupillai, 2000. Insulin antibody response to bovine insulin therapy; functional significance among insulin requiring young diabetics in India. *Diabetes Research and Clinical Practice*, 49: 7-15.
25. Han, X. and B.E. Tuch, 2001. Cloning and characterization of porcine insulin gene. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology*, 29: 87-95
26. Lam, X.M., E.T. Duenas, A.L. Daugherty, N. Levin and J.L. Cleland, 2000. Sustained release of recombinant human insulin-like growth factor-I for treatment of diabetes. *Journal of Controlled Release*, 67: 281-292.
27. Sommers, C.D., D.J. Mans, L.C. Mecker and D.A. Keir, 2011. Sensitive detection of over sulfated chondroitin sulfate in heparin sodium or crude heparin with a colorimetric microplate based assay. *Analytical chemistry*, 83: 3422-3430.
28. Johnson, K.D., A. Clark and S. Marshall, 2002. A functional comparison of ovine and porcine trypsins. *Comparative Biochemistry and Physiology Part B*, 131: 423-431.
29. Bolli, G.B, A.D. Hahn, R. Schmidt, T. Eisenblatter, R. Dahmen, T. Heise and R.H.A. Becker, 2012. Plasma exposure to Insulin glargine and its metabolites M1 and M2 after subcutaneous injection of therapeutic and suprathapeutic doses of glargine in Subjects with Type 1 Diabetes. *Diabetes Care*, 35: 2647-2649.
30. National Fatwa Council, 2009. Hukum penggunaan ubat Clexane dan Fraxiparine. Retrived 15 January 2013. [www.e-fatwa.gov.my](http://www.e-fatwa.gov.my)
31. Nasaruddin, R.R., F. Faizah, J. Irwandi and A.H. Hamidon, 2011. The Importance of a Standardized Islamic Manufacturing (IMP) for Food and Pharmaceutical Productions. 2nd International Conference on Professional Ethics and Education in Engineering 2011 ( ICEPEE'11), Kuala Lumpur Malaysia