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Islamic Ethics and Modern Biotechnology

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ABSTRACT

Contribution of modern biotechnology to the betterment of the agricultural sector and human health is undeniable. However, many consumers, environmental groups and some scientists have voiced strong concerns over the long term effects of modern biotechnology products on human health and environment. According to some researchers, the central problem underlying biotechnology is not just its short term benefits and long term drawbacks, but the overall attempt to “control” living nature on an erroneous mechanistic view. We as human have conscience and our religious belief. Many religions do not allow unrestricted interference with life such as genetic engineering. The pace of discovery in genetic based biotechnology is very rapid and there is anxiety that a kind of technological compulsion (if we can do it, let’s do it) will drive development ahead of proper ethical consideration of their propriety. In Islam, ethic is known as akhlaq based on al-Qur’an and al-Hadith. Ethic of modern biotechnology is classified according to three part of akhlaq: ethical issues related to God (Allah), ethic among human beings and ethic related to living things. In this paper, ethical aspects of modern biotechnology will be discussed from Islamic perspective.

Key words: Agricultural sector, biotechnology, human health, Islamic ethics

ABSTRAK

Sumbangan bioteknologi moden dalam penambahbaikan sektor pertanian dan kesihatan manusia tidak dapat dinafikan. Walaubagaimanapun, ramai pengguna, persatuan-persatuan alam sekitar dan beberapa saintis telah menyatakan bantahan tegas mengenai kebimbangan kesan jangka masa panjang produk bioteknologi moden terhadap kesihatan manusia dan alam sekitar. Menurut sesetengah penyelidik, masalah utama di sebalik bioteknologi bukan setakat mengambil kira manfaat jangka masa pendek atau pun masalah jangka masa panjang tetapi keseluruhan percubaan untuk “mengawal” kehidupan semulajadi dalam pandangan mekanistik yang salah. Sebagai manusia, kita mempunyai naluri hati dan kepercayaan agama. Kebanyakan agama tidak membenarkan campurtangan terhadap hidupan yang tidak terbatas seperti kejuruteraan genetik. Meamndangkan kemajuan penemuan genetik berasaskan

bioteknologi adalah sangat pesat, terdapat kekhuatiran mengenai wujudnya keghairahan teknologi (jika kita mampu melakukannya, kita mesti melakukannya) yang memandu pembangunan masa hadapan tanpa mengambilkira kewajarannya dari segi aspek etika yang betul. Di dalam Islam, etika dikenali sebagai akhlaq yang berasaskan al-Qur'an dan al-Hadith. Etika bioteknologi moden boleh diklasifikasikan kepada tiga bahagian akhlaq iaitu isu etika yang berkaitan dengan Tuhan (Allah), etika sesama manusia dan etika terhadap hidupan lain. Dalam kertas kerja ini, aspek etika bioteknologi moden akan dikaji menurut perspektif etika Islam.

Kata kunci: Sektor pertanian, bioteknologi, kesihatan manusia, etika Islam

INTRODUCTION

The emergence of modern biotechnology as knowledge contributes to great understanding of the genetic of living things (Polkinghorne 2000) and human are able to manipulate living things for the betterment of human life. According to Cartagena Protocol on Biosafety to the Convention on Biological Diversity (2000) modern biotechnology is defined as;

“The application of in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid DNA and direct injection of nucleic acid into cells or organelles”

Modern biotechnology using scientific techniques such as genetic engineering modifies and improves plant, animal and microorganism (Wieczorek 2003) to enhance their value to fulfill human's need. It focused into three major fields: medicine, food and agriculture (BABAS 1999).

In contrast with traditional plant breeding, modern biotechnology through genetic engineering enable man to select DNA that codes for specific characteristic from any organism and recombine it in the new organism. It can transfer the gene that determined the desirable trait and remove gene that code for unwanted traits (Wieczorek 2003). This technique can even be used to transfer genes across different kingdom of organisms (Nair 2007). An organism that has been transformed using genetic engineering techniques is referred to as transgenic or genetically modified organism (Parsley & Siedow 1999).

Transgenic crops were developed to increase agriculture productivity both in quality and quantity (Nair 2007). There are many benefits of the application of modern biotechnology such as the creation of new crops resistant to pests or herbicides, improvement of nutritional value in food and crops which have better ability to tolerate hostile environmental conditions (Nair 2007; Wieczorek 2003).

Almost everything in this life has its benefit, as well as its risks (Wieczorek 2003). Many consumers, environmental groups and some scientists were

concerned about the potential impact of the modern biotechnology on food safety, human health and the environment in short and long term period. There have been many critics on the moral and ethical aspects of genetically modified crops. This happened because of the novelty associated within that transferred genetic information that may come from just any organism. As BABAS (1999) stated, the products of modern biotechnology need to be analyzed in a careful scientific procedure and has to be controlled.

MATERIAL AND METHODS

In this study, data was collected by using qualitative method which involved review of literature, analysis of relevant documents and identification and interpretation of the verses from al-Qur'an and quotations from *al-Hadith*.

RESULTS AND DISCUSSIONS

Most developments in science and technology were pioneered and mastered by non Muslims. They were doing good researches but unfortunately, many disregard the ethical and moral values related to their discoveries. According to BABAS (1999), ethics can usefully be defined as

“The branch of philosophy concerned with how we should decide what is morally wrong and what is morally right”

As modern biotechnology has the potential for the betterment of human beings, Muslims can adopt develop this technology but it should be applied within the rules and ethics in Islam.

Ethics in Islam called *akhlaq* is based on al-Qur'an and al-Hadith. It is not only theoretical but have to be practiced in its entirety. Al-Qur'an and al-Hadith do not describe the entire ethics in Islam directly. Most verses related to modern biotechnology in al-Qur'an just mention the basic rules in Islam while quotations from hadith describe how Muslims should conduct their life (Medieval Islamic Civilization an Encyclopedia 2006) and guide Muslims to behave themselves towards being a good person and to beware that unethical behavior resulted in negative impact or punishment (Mashitoh Yaacob & Ismail Yaacob 2007).

To address the arisen ethical issues in modern biotechnology according to Islamic perspectives these issues will be classified into three parts: ethical issues related to God (Allah), ethics among human being and ethics related to living things. According to the Encyclopedia of Islamic Philosophy (2006), the differences between conventional ethics and Islamic ethics is, ethics in Islam stresses on equal emphasis between material and spiritual aspects and also to achieve *al falah* meaning achieving success and happiness in this world and hereafter.

ETHICAL ISSUES RELATED TO GOD

Change Allah's Creation

Some people claim that the act of “playing god” associated with genetic engineering as the ability of selective breeding that give human the opportunity to transfer gene across species and kingdom such as from animal or bacteria to plant. This transformation is unacceptable especially by religious people. They claim that this scientific skill seems like interfering with God's creation (Polkinghorne 2000).

In al-Qur'an, Allah has stated that He is the only one that can create everything and has the main power to control everything in this world (al Imran 3: 190). All Allah's creations had been created to show human the sign of Allah's existence. It is also the reason why men must obey and worship Him.

“Behold! in the creation of the heavens and the earth, and the alternation of night and day,- there are indeed Signs for men of understanding”

(al-Qur'an, al Imran 3: 190)

But not all people realize this. Although they explore and do research especially in field of science and nature, they are oblivious to Allah's signs. Only those people who have *iman* and *takwa* can see Allah's greatness in anything they do. They always remember Allah at all time and in any situation.

“Men who celebrate the praises of Allah, standing, sitting, and lying down on their sides, and contemplate the (wonders of) creation in the heavens and the earth, (With the thought): “Our Lord! not for naught Hast Thou created (all) this! Glory to Thee! Give us salvation from the penalty of the Fire”

(al-Quran, al Imran 3: 191)

Allah gives a simple example for men who do not believe in Allah. They absolutely cannot create anything even the small insect like a fly even though scientists cooperate to do it. They have no power to create something without permission from Allah. By using genetic engineering, some people claim they have the ability to manipulate living things. In reality, there are many ethical issues arisen from such claim. The following verse is the evidence that human cannot create something as perfect as Allah's creation:

“O men! Here is a parable set forth! Listen to it! Those on whom, besides Allah, ye call, cannot create (even) a fly, if they all met together for the purpose! and if the fly should snatch away anything from them, they would have no power to release it from the fly. Feeble are those who petition and those whom they petition!”

(al-Qur'an, al Hajj 22: 73)

Religious Acceptance

The applications of modern biotechnology have provoked many debates on the moral aspects and religious views. Many Muslims question the sources of gene if taken from forbidden food such as swine (Polkinghorne 2000). Batalion (2000) stated, with transgenic alterations, every food is suspect and it is difficult for the religious and health conscious consumer to identify without a mandated lab.

In Islam, the main concerns about genetically modified food are about their permissible status which refer to the kind of gene inserted, the whole process from the beginning until the research is completed and the short term and long term effects of the product (Ellahi 1994; Bouzenita 2007)

“Blessed is He who sent down the criterion to His servant, that it may be an admonition to all creatures”.

(al-Quran, al Furqan 25: 1)

The meaning of the above verse is that Al Quran has the guidelines to distinguish and judge clearly between true or false and between right and wrong. Al Quran has already stated the criteria what we should do and what should not do. But in some situation, especially in this modern age, scientific approaches can be used to identify the kind of inserted gene by using PCR test that allows the detection of genetically modified organism contents of foods and raw materials in the range of 0.01-0.1% (Huebner et al. 1999).

Abu Ya’la Shaddad ibn Aus, *radiyallahu ‘anhu*, reported that the Messenger of Allah, *sallallahu ‘alayhi wasallam*, said:

“Truly, what is lawful is evident, and what is unlawful is evident, and in between the two are matters which are doubtful which many people do not know. He who guards against doubtful things keeps his religion and honour blameless, and he who indulges in doubtful things indulges in fact in unlawful things, just as a shepherd who pastures his flock round a preserve will soon pasture them in it. Beware, every king has a preserve, and the things Allah has declared unlawful are His preserves. Beware, in the body there is a flesh; if it is sound, the whole body is sound, and if it is corrupt, the whole body is corrupt, and behold, it is the heart.”

(Muslim; *Kitab al Musaqat; Bab Ahzi al Halal wa Taraka al Syubhat;* 1599)

The above hadith emphasizes the importance of achieving Allah’s glory. To achieve Allah’s glory, we must obey Allah’s instruction, perform all the obligations and avoid the prohibitions. The vast majority of acts fall into two categories, either it is *halal* (permitted) or *haram* (prohibited). Only minority of acts fall into third category which is doubtful.

The nearest issues that relate to this hadith is about our food. As Muslims, we must check all the ingredients before consuming any manufactured food. This is because the *halal* and *haram* status of ingredients in most of the food

products imported from the west are unknown. Most importantly, that product should have *halal* certificate from religious authority like Jabatan Kemajuan Islam Malaysia (JAKIM).

ETHICS AMONG HUMAN BEING

Health

Some have claimed that a huge experiment has been underway with Genetically Modified (GM) foods. Billions of GM meals that have been consumed were said to be safe without ill effects on human health. The Society of Toxicology (2002) concluded that there is no verifiable evidence of adverse health effects of biotechnology product. However methods have not yet been developed with which whole foods can be fully evaluated for safety (Skerritt 2004).

In 1996, an International company seed called Pioneer Hi-Bred had put Brazil nut gene into soybeans to improve their protein content for animal feed (Nordlee et al. 1996). Some individuals go into anaphylactic shock which can cause death (Batalion 2000) when they consume this product because they are so allergic to this nut (Nordlee et al. 1996). Fortunately, the product was removed from the market after animal tests confirm the peril (Skerritt 2004).

From an Islamic perspective, health is viewed as one of the greatest blessings that God has bestowed on mankind (al-Qur'an, Taha 20: 81; Hadith narrated by Tirmidhi). Without health, we will not have the ability and energy to perform our obligation to Allah properly.

"Eat of the good things We have provided for your sustenance, but commit no excess therein, lest My Wrath should justly descend on you: and those on whom descends My Wrath do perish indeed!"

(al-Qur'an, Taha 20: 81)

Abu Huraira, *radiyallahu 'anhu*, reported that the Messenger of Allah, *sallallahu 'alayhi wasallam*, said:

"No contagious disease" Abu Huraira said. "The Prophet (peace be upon him) said; "Do not put a sick person with a healthy person"

(al Bukhari; *Kitab al Tib*; Bab la Hamah; 5771)

Allah has entrusted us with our bodies and he will hold us to account on how we looked after and utilized our bodies and good health.

Food Safety

A study on the possible effects of genetically modified food on human health has been carried out by Ewen and Pustzai (1999). They reported that some lab rats died after feeding on transgenic potato and found that the transgenic potato can damage the vital organs, immune systems and increase in lymphocytes in

the intestinal wall of the lab rats. Animal study is a major element in the safety assessment of GM foods. The study is useful in order to identify any potential adverse health effects of importance to humans (WHO 2000)

Value and the importance of human life are very important in Islam as shown by the Qur'an and the Hadith narated by Al-Bukhari & Muslim below. A person cannot be killed for any unrealistic and irresponsible reason. Islam is a peaceful religion where by people must respect each other, and must not pose any threat to anybody. Scientists, industries and government regulators must make sure that modern biotechnology and its products will not harm anything and will not cause any death.

“And spend of your substance in the cause of Allah, and make not your own hands contribute to (your) destruction; but do good; for Allah loveth those who do good.”

(al-Qur'an, al Baqarah 2: 195)

“The blood of a man who is a Muslim is not lawful (i.e. cannot be lawfully shed), save if he belongs to one of three (classes): a married man who is an adulterer; life for a life (i.e. for murder); one who is a deserter of his religion, abandoning the community.”

(Muslim; *Kitab al Qisamah wa al Muharibin wa al Qisas wa al Diat*;
Bab ma Yubahu bihi Dam al Muslim; 1676)

Monopoly

Biotechnology gives advantage as well as profit to industry especially transnational companies (Batalion 2000). Genetically modified soybean seed *Roundup Ready* for example, was created to reduce the use of herbicides (Slater et al. 2003). However, for using this soybean seed, farmers must sign agreement restricting their use, pay technology fees and not allowed saving and replanting the seed (Robertson 2000). UK Soil Association's news report cited that farmers were reporting lower yields, continuing dependency on herbicides and pesticides, loss of access to markets and, critically, reduced profitability leaving food production even more vulnerable to the interests of the biotechnology companies and in need of subsidies (UK Soil Association 2002).

These situations are absolutely not acceptable in Islam as shown by the holy Qur'an and the Hadith below. Trade in Islam must be applied fairly and honestly. Dishonesty has been described as bad as killing another person. Trade in Islam is based on the element of trustworthy between trader and consumer. Monopoly from one side can make another side feel unsatisfied.

“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
(or destroy) yourselves: for verily Allah hath been to you Most Merciful!”

(al Quran, an Nisa' 4:29)

“Do not be envious of one another; do not artificially inflate prices against one another; do not hate one another; do not shun one another; and do not undercut one another in business transactions; and be as fellow-brothers and servants of Allah. A Muslim is the brother of a Muslim. He neither oppresses him nor humiliates him nor looks down upon him. Piety is here - and he pointed to his chest three times. It is evil enough for a Muslim to hold his brother Muslim in contempt. All things of a Muslim are inviolable for another Muslim: his blood, his property and his honour

(Muslim; *Kitab al Birr wa Sillah wa al Adab*; Bab Tahrim Zulm al Muslim; 2564)

ETHIC RELATED TO LIVING THINGS

Harm Another Living Thing

Bt crop has a gene taken from the soil bacterium, *Bacillus thuringiensis* (Vercesi et al. 2006). This crop can protect itself from particular insect without the need of spraying any insecticide (Ozor & Igbokwe 2007). However, beside causing harm to the target insect, it also can harm untargeted insects such as monarch larvae (Losey et al. 1999). In a laboratory assay Losey et al. (1999) found that larvae of the monarch butterfly reared on milkweed leaves dusted with pollen from Bt corn, ate less, grew more slowly and suffered higher mortality than larvae reared on leaves dusted with untransformed corn pollen or on leaves without pollen.

Some insects are very important component in other animal and insect food chain. If the crops are harmful to other untargeted insects these can cause the decline in the number of some animal population (Altieri 2000). Thus, there are both possible advantages and disadvantages impact on the environment by using insect-resistant GM crops. So, we need to find alternatives on how to still reducing the use of pesticide without harming the environment (BABAS 1999).

Harm and causing harm without valid reasons are not allowed and not accepted in Islam. Harm means doing something to someone else that is beneficial to the doer. While causing harm means causes harm to others even though it is not beneficial for him. This is supported by the following verse from the holy Qur'an and the Hadith. Islam is a religion of peace. It does not just take care about one particular person but everybody must be responsible to others besides himself. Someone may do something that is beneficial to him but it may cause harm to others. Any act that causes harm to others, whether individually or as a community and whether it is beneficial or not to the one who causes it, that act is prohibited in Islam.

“For each (such person) there are (angels) in succession, before and behind him: They guard him by command of Allah. Allah does not change a people's lot unless they change what is in their hearts. But when (once) Allah willeth a

people's punishment, there can be no turning it back, nor will they find, besides Him, any to protect"

(al Qur'an, ar Ra'd 13: 11)

It was reported on the authority of Abu Sa'id Sa'd bin Malik bin Sinan al-Khudri, *radiyallahu 'anh*, that the Messenger of Allah, *sallallahu 'alayhi wasallam*, said:

"There should be neither harming nor reciprocating harm."

(Ibn Majah 2000; *Kitab al Ahkam*; Bab Man Buniya fi Haqqihi ma Yadurru bi Jarihi; 2340-2341)

Environmental Pollution

The possible effect on the environment is one of the major concerns about GM crops. Although modern biotechnology can perfect some weaknesses in crops, sometimes it can also disturb natural balance (Polkinghorne 2000). For example, the herbicide resistant transgenic crops which were said to reduce and decrease the uses of herbicide. But on the other hand, it can also become "*superweeds*" (Batalion 2000). These *superweeds* could evade control by the repeated use of the same herbicide and will become more difficult to control (Wieczorek 2003), thus causing environmental problems (Thompson 2003).

Islam does not prohibit any development. In fact, as Allah has appointed human as *khalifah*, we must take this responsibility to develop this world in a good manner. This trust placed upon mankind by Allah is reflected in the verse from Al A'raf and hadith below. Besides reaping benefits from other living things, we must use all resources in this world responsibly without conquering and destroying this world (Sheikh Ahmad Kutty 2008).

"Do no mischief on the earth, after it hath been set in order, but call on Him with fear and longing (in your hearts): for the Mercy of Allah is (always) near to those who do good."

(al Qur'an, al A'raf 7: 56)

"Avoid that which I forbid you to do and do that which I command you to do to the best of your capacity. Verily the people before you were destroyed only because of their excessive questioning and their disagreement with their Prophets."

(Muslim 2001; *Kitab al Fada'il*; Bab Tawqirihi SAW wa Taraka Iksar Sualihi; 1337)

CONCLUSION

Human being was already created by Allah with pure innate disposition that is called *fitrah*. It means, every human being naturally loves the truth and the

good. However, human being cannot constantly and forever be in good condition and good *fitrah*. In this modern age, mankind has to face many challenges in their life such as modern biotechnology issues. As Islam is complete, dynamic and futuristic religion, everything that happens definitely can be handled by Islamic ethics properly guided by verses from al-Qur'an and quotations from al-Hadith. Akhlaq or ethics in Islam teach human beings how to conduct themselves in a good manner. So, Islamic ethics is the appropriate solution which acts as a guideline to govern modern biotechnology that can give benefits to humanity.

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