

Modern Biotechnology: The Importance of Bioethics from Islamic Perspectives

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ABSTRACT

In general, a research on biotechnology brings a lot of benefits to promote health, social and economical growth of a society. This field of research has been among the major researches done in the past three decades. Since then, it has become the benchmark of success of a nation. Bioethical issues arise due to the violation of laws and rights which in turn lead to misappropriation in modern science researches, namely biotechnological research. Thus, this paper hopes to highlight bioethical issues in modern biotechnology and their importance according to Islamic perspectives. This paper also looks into the impact of bioethics on Muslim character and faith as a general guidance so that the works done on the field of biotechnology nowadays are in compliance with the laws of Islam and do not bring detrimental effects to the religion, race and nation.

Key words: Modern biotechnology, bioethics and Islam

Introduction

Due to positive impacts that have resulted over the last three decades, the field of modern biotechnology has been given serious emphasis by developed and developing countries all over the world. The rapid growth of biotechnology today leads to the mushrooming of diverse new products that give benefits to human's everyday needs. The issues of biotechnological research that are always debated include the process, material and product and whether they are in compliance with Islamic laws or not. As we know, Islam encourages new knowledge in the quest of providing comfort and benefits to humans. However, the process of such quest has to abide by certain restrictions and does not have detrimental effects to the entire human race (Muhammad 'Uthmman El-Muhammady, 2005).

Modern Biotechnology

According to Bell (2001), biotechnology and genetic engineering are given great emphasis these days. The development of biotechnology results in effective researches in microbiology, biochemistry, enzymology and microbe genetics. The use of animal cells, such as cultured virus, plays a vital role in producing vaccine and monoclonal antibody from hybrid mass. Plants contribute to the production of clones of plants, synthesis of varied alkaloid and other secondary metabolites. Microbiology, genetic, molecular biology and biochemistry are the backbone of biotechnology (Ignacimuthu, 2008). The

activities involved in biotechnology can be divided into eight major categories. The activities, together with their results, are presented below:

- a) Genetic engineering and DNA recombination – enzyme, vaccine, hormone and antibody.
- b) Cultured cell – single-cell protein, vaccine, monoclonal antibody and biomass product.
- c) Sewage treatment and uses – cellulose and sewage water treatment.
- d) Enzyme and biocatalysts – food processing, diagnostic kit, chemotherapy and biosensor.
- e) Energy source – alcohol, hydrogen, methane and ethanol.
- f) Nitrogen determination – nitrogen fertilizer reduction.
- g) Fermentation and pharmaceuticals – ethanol, antibiotic, vitamin, enzyme, amino acid and steroid.
- h) Health care – DNA probe, gene therapy, antibiotic and hormone.

In 2000, the global income of modern biotechnological industry was estimated to be more than US\$70 billion with pharmaceuticals contributing 60% of market value, whereas diagnostic 14% and enzyme industry 4% (Ignacimuthu, 2008). Today, biotechnology just like DNA recombination technology, involves hybrid mass technology, that uses cells and enzyme to produce plants from isolated cells. As such, gene manipulation is the major process that is practiced in the field of modern biotechnology all over the world now (Primrose, 1987).

Biotechnological applications cover various aspects of human life and the scope is very wide. They include bioprocesses and fermentation technology, cultured cells, enzyme technology, the production of biological energy source, single-cell protein, sewage treatment, environmental biotechnology, medicinal biotechnology, agricultural and forestry biotechnology, food and beverage biotechnology, safety in biotechnology, good manufacturing practices (GMP), quality control in manufacturing, good laboratory practices (GLP) and marketing (Nair, 2004). Biotechnology is the technology of the 21st century and the key to future technologies. This field has great potential because it has the ability to resolve problems pertaining to science and humanity. The government is very serious about the biotechnological sector when a lot of opportunities and financial aids have been awarded to promote it. Since the government is giving particular emphasis on the development of biotechnology, we need to ensure that our health and environment remain intact. (Abu Bakar Abdul Majeed, 2002).

Bioethics from Islamic Perspective

The theme of this discussion is tailored to the relationship between bioethics and science and the issues of human behavior that involve both scientists and consumers, and its relevance to faith, belief and religion as a whole. The discussion also touches on biotechnological issues that are related to ethics for further understanding, and in turn identifies the best possible solutions to avoid problems from happening. The society manipulates science and technology for personal gains without considering whether the impact is positive or negative. The question to be considered here is, how much can science and technology help human beings lead a harmonious, safe and civilized life?

Ethics, which are emphasized in various fields of knowledge, have played an important role in human existence. The issue of ethics in Islam refers to the elements of behavior and morality that are very much related to faith. In the field of science, namely biotechnology, the bioethical issues include all aspects of a certain kind of science from the use of science and technology and their application in human life. Bioethics involve ethics in medical and environmental aspects which are directed to biological and medical issues, and also the interaction between the community and the environment using biotechnology (Purohit, 2005). Besides that, bioethics are also related to the elements of laws that restrict people from

doing certain acts or behavior. This statement is supported by Smith (1988 & 2009) and Purohit (2005) who state that bioethics involve the issues of beliefs or religion. This idea suggests that religion and individual beliefs play a certain role in solving human issues. As an example, genetic engineering involved in the transfer of non *halal* animal genes as in pigs into bacteria for duplication. This technology is called DNA recombination technology. Is the by-product *halal* to be used? In dealing with this issue, the Islamic approaches and methods are applied to determine what is right and wrong, thus reference is made to Al-Quran and Al-Hadis. The issuance of fatwa is the best way to determine the laws of something new. The fatwa for the abovementioned issue was released by the *Muzakarah Khas Jawatankuasa Fatwa Kebangsaan Bagi Hal Ehwal Agama Islam Malaysia* on 12 July 1999. The fatwa stated that:

- a) Materials, foods and drinks processed from the pig's DNA biotechnology is against Islam, therefore they are *haram*.
- b) The use of DNA biotechnology in processing materials, foods and drinks has not reached the level of *darurat* since there are other options.

The decision made by *Muzakarah Fatwa* is based on the following arguments:

- a) In DNA biotechnological process, the use of pig's protein in the host or surrogate or cells that become seed to humans, animals or plants for the purpose of fertility reproduction, is not *halal* because pig's materials are *haram*.
- b) *Usul fiqh* methods cannot be used in transferring of cells or pig's genes through DNA process to avoid misconception which may touch the sensitivity of Muslims.
- c) One *usul fiqh* method that gives a clear understanding of this issue is "anything that is originally *harus*, is *halal* and anything that is originally *haram*, is *haram*" or "when anything that is *halal* mixes with anything that is *haram*, no matter how much, is *haram*."

We now realize that religious influence, Islam in particular, is crucial in resolving human issues that leads humans to the right path.

Bioethical Issues Concerning Behavior and Faith

Shaikh Mohd. Saifuddeen Mohd Salleh et al. (2005) states that major findings in the fields of molecular biology and genetic engineering have brought about a lot of serious issues in laws, ethics and humanity. This statement is supported by Rajasekaran (2002), Abu Bakar Abdul Majeed (2002), Purohit (2005) and Smith (1988 & 2009). They also feel that certain areas need to be given serious consideration in doing research on human genome, gene manipulation, cloning, gene therapy and genetically modified crops. Various issues arise from biotechnology due to lack of understanding and society's negative perception towards this field, in particular the issue of the safety of the technology used in the production process. For example, the production of transgenic plants is associated with risks to consumers and environment. Apart from this, issues related to cloning are debated heatedly among scientists and the community, especially the ethical issues involving human cloning. Ignacimuthu (2009) highlights four major issues in bioethics:

- 1) reproduction, birth, life and death issues
- 2) health and biomedical innovation issues
- 3) genetic engineering, biosafety and experimentation issues

- 4) biodiversity, intellectual property rights (IPR) and environmental issues.

Meanwhile, Abu Bakar Abdul Majeed (2002) stresses in great detail issues related to genetic, reproduction, human cloning and human genome project (HGP). Both of them state the importance of bioethics in biotechnology that needs to be observed by biotechnologists, researchers and medical practitioners so that they do not go beyond the limits stipulated by laws and religion. Human cloning, for instance, is considered as a threat to human existence from the religious and legal perspectives. This can also affect family relationship as cloning is asexual reproduction. In general, a child is born from a sexual relationship between a man and a woman. Thus, the bloodline or family relationship between the child and parents is clear. If human cloning is successful, that is humans are created asexually, it will affect the bloodline which will lead to identity crisis and will give impact to the family institution that has tied the knot according to religion and law. We are afraid that being married is no longer important and people will defy the natural process of human existence set by Allah s.w.t. If this happens, future generations will be ruined and the divine concept as a whole will be ignored. This will definitely create major destruction of the human's faith and life.

Based on the scenario of humanity issues, biotechnology cannot be separated from the beliefs and religion particularly for Muslims since it involves Islamic laws. Therefore, the integration of this field and Islamic Studies to educate the community on Islamic science is crucial. Islam is dominant in all fields of knowledge as Islam is ad-din which means a way of life. So, all rituals and behavior of Muslims must be based on two major foundations, namely, Al-Quran and Al-Hadis.

Conclusion

Bioethics are the codes of practices that need to be followed so that all studies and researches in the field of biotechnology are in line with human natural state and will avoid the destruction of the environment. The integration of religious or theological influence, particularly Islamic values, and this field is very important to provide a guideline to researchers in producing scientific and technological products that abide by the Islamic laws. InshaAllah, the merger between religion and biotechnology brings about new knowledge towards *mardhatillah*.

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