ISSUES ON HALAL MEAT IN MALAYSIAN AND INDONESIAN MARKETS

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ABSTRACT

In recent years, interest in meat issues and research has increased. Many consumers are concerned about the meat they eat because it's a main source of protein in a daily consumption. However in issues pertaining with meat, halal and safety are a vital focus for Muslim consumer, especially in Southeast Asia region. Some of the related issues in halal and safety meat are criminal and terrorist activities, including meat fraudulent such as adulterant substances (adulteration), substitution, livestock stolen, grey market product, smuggling, misrepresentation or mislabelling etc. In parallel with meat fraudulent activities, perpetrator tends to use a harmful and unsafety material in the meat product, namely *glonggong* meat, formalin meat, *tiren* meat, exotic meat etc. Thus, this review is intended to provide an overview of halal and safety issues in a meat product in the Malaysian and Indonesian markets. The findings show that there are various fraudulent actions that can threaten the lives of humans, animals and other food sources as well as opposed with Islamic Shariah guidance. Therefore, all parties need to mobilize a regional collaboration in combating food perpetrators and terrorist to ensure that the meat products in the market fit with halalan tayyiba criteria. In the same time, this collaboration will boost regional halal ecosystems grow rapidly, especially in Southeast Asia.

Keywords: food safety; food terrorism; halalan tayyiba; meat; regional halal ecosystem;

ABSTRAK

Pada masa kini, minat berkaitan isu dan kajian daging semakin berkembang. Kebanyakan konsumer prihatin tentang daging yang mereka makan kerana ia merupakan sumber utama protein dalam pengambilan makanan harian. Walaupun begitu, dalam isu berkaitan daging, aspek halal dan keselamatan merupakan fokus utama kalangan konsumer Muslim, khususnya di Asia Tenggara. Sebahagian daripada isu halal dan keselamatan daging adalah tindakan jenayah dan terorisme, termasuklah penipuan seperti pemalsuan kandungan, penggantian kandungan, pencurian haiwan ternakan, pasaran kelabu produk, penyeludupan dan penyalahlabelan kandungan. Selari dengan tindakan penipuan, para penjenayah cenderung menggunakan bahan yang merbahaya dan tidak selamat dalam produk daging, misalnya seperti daging glonggong, daging formalin, daging tiren, daging eksotik dan seumpamanya. Sehubungan itu, kajian ini akan membincangkan tentang isu halal dan keselamatan produk daging di pasaran Malaysia dan Indonesia. Dapatan kajian menunjukkan bahawa terdapat pelbagai bentuk tindakan penipuan dalam produk daging di pasaran yang boleh mendatangkan kesan terhadap kehidupan manusia, haiwan ternak dan sumber makanan lain,

yang mana ianya bertentangan dengan panduan Syariah Islam. Oleh itu, semua pihak perlu menggembleng tenaga dalam kerjasama serantau bagi melawan aktiviti penjenayah dan terroris makanan bagi menjamin produk daging di pasaran selari dengan kriteria halalan tayyiba. Dalam masa yang sama, kerjasama ini dapat melonjak perkembangan ekosistem halal serantau, khususnya di Asia Tenggara.

Kata Kunci: keselamatan makanan; terrorisme makanan; halalan tayyiban; daging; ekosistem halal serantau

INTRODUCTION

Meat is one of the best nutritional sources of protein for human consumption, and due to its valued flavour and taste, is being consumed largely throughout the world (Rahmati et al., 2016). In the past three decades, the total meat production in Asian countries has been essentially improved because of the rapid growth of the economy and population. From 1985 to 2014, the meat production increased by 252.47%, from 38.5 to 135.7 Mt. Although the rate of demand has declined in the past 10 years, the total amount of meat production is still gradually increasing. In the last 10 years, the amount of beef, mutton, chicken, duck, and goose increased by 27.25%, 18.92%, 52.73%, 33.21%, and 27.18% respectively (Zhang et al., 2017). As such, the global meat demand is expected to have doubled by the year 2050 (FAO, 2009). The most of the growth in meat demand comes from developing countries (Bekker et al., 2017).

Good-quality beef is a tremendous source of protein and minerals and therefore is highly preferred by consumers. Recently, there has been a growing public awareness of food safety issues related to meat products, such as the illegal production of water-injected meat, fake beef and lamb, rotten meat, and toxic meat products (Liu et al., 2016). Besides the safety issues, there are also halal-related issues. For example, such as halal meat mixed with haram meat, carcass, substitution of beef with pork meat, mutton with the dog meat etc.

Based on media reports recommend that there has been an expansion in food related criminal action since the economic crisis of 2007– 08 – including sheep robbery, exchanging illicit halal meat, and the contaminated or mislabelling of food products (McElwee et al., 2017). Manning et al. (2016) reported, in connection with the United Kingdom (UK) Foot and Mouth Disease (FMD) outbreak of 2001, suspicions that meat had been illegally imported, illegal movements of sheep, to the spreading of disease with criminal intent, criminal compensation claims, and so on.

In this regard, the study will scrutinize halal issues related to the food products especially meat in Malaysian and Indonesian markets, plus the elaboration of Shariah guidance on meat products.

DEFINITION OF HALAL MEAT

Halal defined as lawful or permissible to use or to engage in, according to Quran and Sunnah. Meanwhile, meat is the edible flesh of livestock, poultry or other animals. In addition, halal meat can be defined as the meat derived from halal animals that have been slaughtered in accordance with Islamic Sharia (Qureshi et al., 2012; Hamdan et al., 2017). Thus, the selection of halal meat is an important aspect that should be taken into consideration in the daily life of every Muslim consumer. This is because the consumption of halalan tayyiba meat will influence the level of health, emotional stability and spiritual equilibrium.

BASIC GUIDANCE ON HALAL MEAT

Based on the Quran, Muslims are obligated to eat the meat of an animal upon which Allah's name has been invoked (invocation during slaughtering of the animal). "Therefore, eat of that upon which Allah´s name has been mentioned if you are believers in His communications," (Al-Qur'an, 6: 118).

> Halal meat must not come from the prohibited meat as mentioned in the al-Quran (5) 3: "Forbidden to you is that which *dies of itself*, *blood*, and *flesh of swine*, and that on which any other name than that of Allah has been invoked, and the strangled (animals) and beaten to death, and that killed by a fall and that killed by being smitten with the horn, and that which wild beasts have eaten, except what you slaughter before, and what is sacrificed on stones set up (for idols); and that you divide by the arrows, that is transgression.
> This day, those who disbelieved have despaired of your religion, so fear them not, and fear Me. This day, I have perfected for you your religion and completed My favour on you and chosen for you Islam as the religion, but whoever is compelled by hunger, not inclining wilfully to sin, then surely Allah is Forgiving, Merciful.

Therefore, halal meat must be gained from halal sources only. All land animals are halal except for pigs, dogs, and carnivorous animals that slash and kill such as tigers, lions, bears, cats and similar animals; animals with tusks such as elephants; and animals that are permissible to be exterminated in Islam such as rats, centipedes, scorpions and other similar animals. Equally, all birds are halal except for scavengers and birds of prey, that are, those with claws and that feed by snatching and tearing like eagles; and also birds that are forbidden to be killed in Islam such as woodpeckers (Malaysia, 2009). In order to attain halal meat, halal species of animals must be slaughtered using a halal slaughtering method (Nakyinsige et al., 2012).

Hence, based on the Shariah guidance that has been highlighted above, we concludes that the halal meat must fit this criteria, namely:

1. Not contain pork and its derivatives.
2. Not derived from carcasses and non-slaughtered.
3. Not derived from prohibited animal.
4. Not derived from meat cut partly off a living animal.
5. Not harmful to health.
6. Not contain element of fraud.
7. Not contain intoxicating substances

ISSUES ON HALAL MEAT

According to Hargin (1996), adulteration is defined as the addition of undeclared substances or materials so as to increase bulk product or weight, making the product appear more valuable than it actually is. In the case of meat and meat articles, adulteration not only refers to the replacement of ingredients but also to incorrect information concerning the origin of raw materials (Montowska & Pospiech, 2014). Meat adulteration can take many forms and there are many points of vulnerability due to complex supply chains (Black et al., 2016).

Spink and Moyer (2011) proposed seven types of food fraud: adulteration, counterfeit product, diversion of products outside of intended markets, over-run, simulation, tampering and theft. In specific fraudulent issues related with meat product. Ballin (2010) explain that meat adulteration can be structured into four main areas where fraud is most likely to happen:

1. Meat origin (sex, meat cuts, breed, feed intake, slaughter age, wild vs farmed meat and geographic origin).
2. Meat substitution (species, tissue).
3. Meat processing or treatment (fresh vs thawed, meat preparation)
4. Non-meat ingredient additions (water and additives).

So, food fraud encompasses the deliberate and intentional substitution, addition, tampering, or misrepresentation of food, food ingredients, or food packaging; or false or misleading statements made about a product for economic gain (Charlebois et al., 2016).

In the global issues, the food crisis triggered in 2013 by beef substitution with horse meat in the lasagna produced by Comigel and marketed by Findus, led to the checking of other meat products marketed on the European market (Stanciu, 2015). In January 2013, the Food Safety Authority of Ireland announced the discovery of horse meat in a number of beef burgers, heralding a pan-European meat authenticity crisis. In the UK, a critical investigation by the Food Standards Agency (FSA) found several beef products that contained horsemeat,

resulting in the large-scale removal of products from supermarket shelves (Jakesa et al., 2015). Additionally, a test done by the British food industry on 2501 samples of beef pasta for horse adulteration had revealed more than 1% of horse meat merged with beef (www.nytimes.com, 2013).

Meanwhile, issues related with meat in Malaysian and Indonesian markets are mostly reported in mass media especially newspapers, and website, but very few scientific researches pertaining to these issues have been conducted. Some meat issues that have arisen are:

1. Formalin meat

Formaldehyde is a chemical commonly used in industry for the manufacturing of plastic resins that can be used in wood, paper and textile industry. Formalin, which is a solution of about 37% formaldehyde, serves as disinfectant and preservative for household products (Arthur, 2007). Some industry players used a hazardous substance such as formalin to maintain and preserve a meat texture and colour (Sulistyo & Fikri, 2014; http://news.liputan6.com). This chemical is very hazardous to human health due to the fact that it can cause cancer and leukaemia (Ahmad, 2010).

2. "*Glonggong*" meat

In Indonesian language we called *glonggong* literally means a water injection into the body of cow or chicken either directly into the meat or inserted through the mouth of the animals. Water-injected beef has aroused public concern as a major food-safety issue in meat products. The cow has forced to drink as much water as possible before slaughter resulting in weight gain. However, the quality of the meat decreases because the meat is easier to decay and contaminate with microbes so it cannot be eaten by humans. Forcing these animals to drink as much water as possible can cause animal to faint or die (Layla, 2013). Clearly, the animal's welfare is unattended and there is an element of fraud against consumers because of poor quality meat (Sulistyo & Fikri, 2014). The animal may possibly turn into carcasses due to death before slaughter caused by water entering its lungs and also from stomach rupture (Prasetyo et al., 2009).

3. *Tiren* meat

In Indonesian language we called *ayam tiren,* derived from acronym *mati kemaren*, literally means chicken that already died yesterday. Therefore, *tiren* meat refers to a dead chicken and

has become carcasses due to illness or other causes (Layla, 2013). This *tiren* chicken has sold with a cheaper price compared to the fresh meat. Usually, *tiren* chicken has chosen by a street hawker to make food-based products such as meatballs and satay. However, it's contaminated with harmful bacteria and consumers are exposed to the risk of food poisoning (http://news.liputan6.com).

4. Fake meat

Fake meat refers to a substitution of physical characteristics, textures and taste of meat to be a new physical, texture and taste of others meat. Basically, perpetrators are using a type of chemical that can eradicate the physical, texture and taste as well as odour of fake meat to original meat. In Indonesia, meat sellers are substituted a beef with wild boar known as "wild boar" by adding a little colour or soaked with cow's blood to look like a beef meat in colour and odour (Sulistyo & Fikri, 2014).

5. Exotic meat

The exotic meat from wild animal species, mostly from terrestrial mammals to birds and reptiles, is mostly referred to as bush or game meat (Sandalj et al., 2016). Beyond its nutritional contribution, bush meat also provides an important source of income where few alternatives exist, since it is easily traded. Furthermore, bushmeat is often favoured for consumption because it is familiar, traditional or since it confers social prestige, while in many (but not all) cases it may be preferred for its taste (Cawthorn & Hoffman, 2015). Due to the usage in alternative medicine and tradition beliefs, the demand for wildlife meat has increased significantly. For example, meats from protected wild animals like wild elks, venison, deer and pythons are sold illegally and publicly in Beriman Tomohon market, Indonesia (www.beritanusantara.id). Despite its nutritional contributions, there are also some serious health concerns associated with the consumption of bushmeat. Up to 75% of emerging infectious diseases in humans are of zoonotic (animal) origin, most of which originate in wildlife. The hunting and butchering of bushmeat, particularly primates, have been implicated in the transmission of several zoonotic pathogens to humans, including simian immunodeficiency virus (SIV, a zoonotic form of HIV), Ebola, severe acute respiratory syndrome (SARS), monkeypox, simian T-lymphotropic virus and simian foamy virus (Cawthorn & Hoffman, 2015).

6. Meat containing foodborne zoonotic diseases

Foodborne diseases are an important cause of morbidity and mortality, and a significant impediment to socio-economic development worldwide, but the full extent and burden of unsafe food, and especially the burden arising from chemical and parasitic contaminants, has been unknown (WHO, 2015). Zoonotic threats can be transmitted directly or indirectly between animals and humans, for instance, by consuming contaminated foodstuffs or through contact with infected animals.

WHO (2015) reported 420–960 million foodborne illnesses and 310,000 to 600,000 deaths in 2010 representing 25–46 million Disability Adjusted Life Years (DALYs); among the culprits, namely Salmonella Typhi and non-typhoidal Salmonella enterica, Campylobacter spp. Taenia solium, enteropathogenic Escherichia coli, hepatitis A virus, norovirus and aflatoxin (Saucier, 2016).

Moreover, horsemeat is considered as a good dietetic alternative for red meat; however, it has been responsible for 16% of human trichinellosis outbreaks. Between 1975 and 2005, 15 horsemeat-related outbreaks of trichinellosis involving at least 3200 people occurred in France and Italy, two countries with the largest per capita consumption of horsemeat. Curiously, the regions in Italy where these outbreaks occurred were historically interested by the French domination which probably has introduced the habit to consume raw horsemeat (Rostami et al., 2017).

There are other cases related with the zoonotic Sarcocystis species in pork, Sarcocystis suihominis, with domestic and wild pigs as intermediate hosts. Two zoonotic species are present in cattle, Sarcocystis hominis, and Sarcocystis heydorni; neither has been recognized in North America. Although isolated human cases of muscular sarcocystosis have been known for more than 100 years, recently a mysterious serious, diagnostically challenging illness has been reported in humans on vacation/travel to Malaysia (Dubey, 2015).

In addition, MERS-CoV is a zoonotic virus, which means it is a virus that is transmitted between animals and people. Studies have shown that humans are infected through direct or indirect contact with infected dromedary camels. MERS-CoV has been identified in dromedaries in several countries, including Egypt, Oman, Qatar, and Saudi Arabia (WHO, 2017). How the MERS-CoV transmits is, unfortunately, a mystery, but it is presumed to involve the direct interaction with the mucus secretion (saliva) of diseased camels or via the intake of milk or perhaps the uncooked meat (Mahallawi, 2017).

Likewise the mad cow disease or also known as Bovine Spongiform Encephalopathy (BSE). The consumption of meat from an animal which is afflicted by BSE disease will increase the risk of Creutzfeldt-Jakob disease (vCJD). This disease will cause shrinkage of the human brain (Roslan & Abdul Manaf, 2014).

Many cases have been reported on food poisoning from *salmonella,* which can cause diarrhoea, fever and abdominal cramps in Malaysia (fsq.moh.gov; www.kosmo.com.my). Therefore, the safety of food chain is threatened by existing and emerging pathogens including the foodborne pathogens and zoonotic infections (Fitzpatrick, 2013).

7. Mislabelled meat

Mislabelling and malpractices in the food chain have attracted public scrutiny due to increased awareness among consumers in getting correct information and their demand for transparency (Chuah, 2016). Additional descriptive label information can be added as a consequence of branding, product marketing purposes and regulations. While regulations enshrined in national and international law underpin mandatory label information (Ballin, 2010). Moreover, using undeclared ingredients, such as infected neurological tissues, might be a reason for health complications, examples being the use of bovine, ovine, and porcine in deer products and bovine spongiform encephalopathy (BSE) in heated meat products (Rahmati et al., 2016).

The substitute of buffalo meat with raw and processed beef meat in Malaysia is most probably due to economic motivation. Thus, products labelled as beef without specifying the meat sources as of buffalo–or cattle-origin will be regarded as mislabelled. The study conducted in the Malaysian market on beef and poultry labelling found that only 21.7% of the labelled meat was properly and 78.3% not accurate. From 40 of the 50 samples labelled as beef cattle were taken in the market found a buffalo DNA (Chuah et al., 2016). In addition, on August 8, 2013, the Kosmo newspaper reported that deer meat also replaces with buffalo meat. The prices sold are so low while the market price for deer meat is at least RM50 for 1kg (www.kosmo.com.my).

In line with this context, the truthful and accurate food labelling is essential to assure consumers food safety and choice. In meat products, there is a requirement to indicate the amount of each ingredient contained in them. The declaration establishes a new definition of meat with the purpose of right product labelling (Sentandreu & Sentandreu, 2014).

8. Aniline meat

The *Ayam Kampong* (Malaysian spelling) or "free-range chicken" soaked with a kind of dye that is known as aniline so that the chicken flesh is yellow and looks like a real *ayam kampong*. For example, The Star newspaper reported on September 24, 2013, the existence of fake chicken dyed so that it looks yellow-skinned like a real *ayam kampong*. The yellow dyes that are dipped chickens in commonly used widely in the wood and leather industry. (www.thestar.com.my)

9. Garbage meat

Garbage meat refers to the meat collected and scavenged from garbage sites and dumps. Garbage scavengers, also known as trash mongers or garbage diggers, find treasures to recycle from other people's trash recycled, especially from food restaurant. The collected meat will be reprocessed by washing in addition to mixing dyes and formalin to remove odours and flavours (ramadan.sindonews.com; news.liputan6.com). Some of this meat will be recycled as meatballs (Layla, 2013).

Based on the above discussion, there are various issues related to meat products either in raw or processed form which expose to fraudulent and adulteration activities whether locally, regionally or globally. While these fraudulent activities can lead harmful effects to consumer, the aspect of the *Halalan Tayyiba* Analysis and Critical Control Points (HTACCP) needs to be emphasized in meat products to ensure halal and safety food.

FOOD TERRORISM: NEW THREAT FOR FOOD CHAIN

According to Ulrich Beck (2002), world risk society is a world of uncontrollable risk and we are facing unnatural, human-made, manufactured uncertainties and hazards beyond boundaries we are confronted with. The risks related to the food chain are also a characteristic of our "risk societies". In other words, we (as consumers, citizens, policy makers or scientists) are confronted with risks which are invisible to the profane; spatially unlimited; temporally undetermined and scientifically under discussion (Brunet et al., 2010).

Nowadays, the activity of terrorism has grown rapidly in line with the sophistication of technology achieved by humans. It evolved from the traditional approaches and develops in new forms, such as cyber terrorism, bioterrorism, and food terrorism. Food terrorism has been defined by the World Health Organization (WHO) as “an act or threat of deliberate contamination of food for human consumption with chemical, biological, or radio-nuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting

social, economic, or political stability" (Ereifej, 2011). In other words, it refers to deliberate contamination of some component of the food supply with the intention of doing physical or economic harm or creating fear (terror). Food is one of the several vectors used to induce intense prolonged fear with imagined or real future dangers and has been used around the world (Kinsey et al., 2009).

In the issue related with food terrorism, it involves attacks on food sources, especially agriculture either in the form of agro terrorism or bioterrorism. Different targets of food terrorism attacks in the farm-to-table food continuum include crops, livestock, food products in the processing and distribution chain, wholesale and retail facilities, storage facilities, transportation, food and agriculture. Agricultural sectors of all nations are vulnerable to terrorist threats and attacks. Intentional introduction of a poisonous or nontoxic additive that can adversely affect either plants or animals can be placed at various stages in the agricultural infrastructure that provides a population with its food supply. The effects can be severe illnesses and death, and large economic losses, both direct and indirect (Rohn & Erez, 2013).

The CATRC (2010) defines agro-terrorism as hostile damaging action on agricultural gamut that includes infrastructure, inputs, processes and products, intentioned to substantially harm domestic or international interests of the attacked, in order to advance political objectives of the attacker. The reasons for agro terrorism are the desire to alter supply or demand conditions for a commodity in order to cause serious economic hardship for political adversaries (Caldasa & Perz, 2013).

The analysis by Carus (2001) on the use of biological agents since 1900-1999, found only four catastrophes of terrorism definitely involved, namely Aum Shinrikto (1990-1995), which used Bacillus anthracis agents, Botulinum toxin, and other pathogens, Rajneeshees (1984) which used Salmonella typhimurium agent, *Dark Harvest* (1981) which used Bacillus anthracis agents and *Mau Mau* (1950) which used a toxin, African milk bush (Synadenium grantii).

The tragedy of September 11, 2001, has given rise to a heightened awareness of the potential for a terrorist attack of a biological or chemical nature of the U.S. food supply, including agriculture. The threat of terrorism on the food supply is real and because of the huge economic, health and social welfare costs associated with food contamination, it is believed that the food supply presents a tempting target for terrorists who want to destabilize the economy (Turvey et al., 2010). Such fears have escalated globally since the September 11 attacks and subsequent anthrax attacks 1 month later (White, 2009).

However, according to Stephen (2003) the most difficult issue about bioterrorism is that its possibilities exist in water, land, food, air, and the human being itself. Biological agents that can be used for bio terroristic attacks are readily available, are relatively inexpensive to produce, store, and transport from one country to another. They can be a target to terrorize unprotected civilians by contaminating them with potential biological agents such as bacteria, rickettsia, viruses or their toxins, or toxic chemical agents such as metals, cyanide, nerve agents or industrial chemicals and pesticides (Ereifej, 2011). There are certain characteristics that will make certain biological agents more attractive than others, i.e. transmissible through ingestion, stability, availability – agents that are more readily available are more likely to be used by bioterrorists, limited technical expertise and equipment required to propagate or amplify, highly pathogenic/low infectious dose in food, high mortality, difficult to detect in food , potential for mass fear, difficult to diagnose in humans, potential for human–human transmission (Hansen, 2010).

Beginning in 1936, the Japanese army ran a top-secret BW facility in occupied Manchuria known as Unit 731, where military scientists cultivated deadly bacteria and tested them on prisoners of war. Japanese military aircraft dropped ceramic bombs containing plague-infested ºeas and grain (to attract disease-spreading rats) on eleven Chinese cities in 1940, triggering deadly epidemics (Tucker, 2002). In 2003 there was the "beer and burger plot", an al Qaeda terrorist plotting a bomb attack on Britain told an accomplice to get a job at a stadium and sell contaminated beer at soccer games. In 2008 in Iraq, thallium (thallium sulphate probably) an odourless, tasteless chemical sometimes used in insecticides and rat poison was put into a cake that was delivered to a sports club by a sports coach who had left the club on bad terms. As a result of this poisoning, two children died and five people were seriously ill. On September 12, 2008, there were reports, from China of melamine contaminated infant formula. According to media reports, more than 54,000 infants and young children have sought treatment for urinary problems, possible renal tube blockages and possible kidney stones related to the melamine contamination of infant formula and related dairy products (Tucker, 2002).

Along the lines with bio-terrorism attack, BSE has been found in more than 187,000 animals in approximately two dozen countries. However, the majority of cases, approximately 183,000, have been in the United Kingdom (UK), where the disease was first detected in 1986. BSE is thought to be transmissible to humans who eat contaminated beef, causing a variant form of CJD (variant or vCJD) that was first recognized in 1996 during the BSE outbreak in

the UK. Almost 200 people have been diagnosed with vCJD since 1986, most of them in the UK. As of mid-May 2007, no persons had been reported to have contracted vCJD in the United States (Lister & Becker, 2009).

In particular, health threats including infectious diseases, natural and man-made disasters and environmental change impact human populations worldwide, but they are especially challenging for vulnerable populations in many of the developing nations of Southeast Asia (Campbell, 2012). Food and water borne diseases caused by Escherichia coli, Clostridium botulinum, Vibriospp., Salmonellaspp. and other microbial pathogens are responsible for more than 600,000 deaths in Southeast Asia each year (WHO 2008). Additionally, an outbreak of Nipah virus in Malaysia occurred when pigs penned near fruit orchards contracted the virus from the droppings of bats, whose habitat had shifted as a result of deforestation. The infected pigs then readily transmitted the virus to their handlers. Moreover, as mentioned by Solodoukhina (2011) in the last few years several diseases detected such as severe acute respiratory syndrome (SARS), monkey pox, and avian influenza.

Consequently, the threat of food terrorism consider as invisible enemy. So that, the specific countermeasures to minimize or eliminate vulnerabilities should be taken to protect the food supply and chain from deliberate contamination that is meant to intentionally harm individuals or organizations (Batt, 2016). The failure to develop a food defence and protection will lead the catastrophic in food chain which include livestock and crop as well as economic and it will directly affect the human survival.

CONCLUSION

Islam strongly emphasizes the aspect of halalan tayyiba of food consumption among its followers. The food intake in terms of meat consumption by a Muslim must be gained clearly from halal animals that have been slaughtered based on Islamic practice, besides not contaminated with harmful element. Therefore, based on the issues that are arising in halal meat production, all parties whether the government, halal authorities and even Muslim consumers, especially in the Southeast Asia region, should strengthen regional collaboration in developing the halal industry by empowering and preserving regional halal ecosystems. This collaboration is critical for constructing a regional food defence system as well as the safety and security food, mainly concerning with meat products. With this collaboration, criminal activities related to meat and food terrorism can be managed efficiently.

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