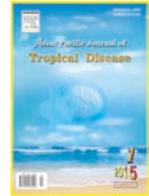


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## Food poisoning outbreak in Thailand: A review on situations

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### ABSTRACT

An important consideration in public health management is gastrointestinal disorder. Of several gastrointestinal problems, the food poisoning is an important disorder. Food poisoning can be seen worldwide with high prevalence in developing countries. This disorder can cause both morbidity and mortality to the patient. The food sanitation is required for successful management of food poisoning. In this article, the authors briefly review and discuss on the data on food poisoning outbreak in Thailand. The article focuses on the problem that is existed in this tropical country.

## 1. Introduction

The gastrointestinal tract is an important organ system in any human beings. An important consideration in public health management is gastrointestinal disorder[1–5]. The gastrointestinal disorder can result in several clinical presentations especially for abdominal pain and diarrhea[1–5]. In medicine, the gastrointestinal is common. Of several gastrointestinal problems, the food poisoning is an important disorder. Food poisoning is a specific disorder that is relating to food. The problem occur when one intake food and get the toxin from food. There are many kinds of toxin. The toxins can be from contaminated chemicals or generated by contaminated pathogens (usually

bacteria and fungus)[6–10]. The food sanitation and food safety becomes the global issue at present[11,12].

Food poisoning can be seen worldwide with high prevalence in developing countries[13,14]. It is usually due to the poor sanitation. This disorder can cause both morbidity and mortality to the patient [15,16]. The food sanitation is required for successful management of food poisoning[17,18]. However, this is usually not successful and becomes a very hard problem to manage in many countries. In this article, the authors briefly review and discuss on the data on food poisoning outbreak in Thailand. The article focuses on the problem that is existed in this tropical country.

## 2. Prevalence of food poisoning in Thailand

Thailand is a tropical country in Southeast Asia. Due to the hot climate, there are many tropical diseases including to tropical food poisoning. The problem can be seen in every

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year. Food poisoning is also the disease to be registered in Thailand. There is still no report on actual prevalence of food poisoning in Thailand. Nevertheless, an interesting report was by Ananchaipattana *et al.*[19]. In this report, the prevalence of foodborne pathogens in retailed foods in Thailand was investigated. It could be shown that the contaminate rates of several bacterial pathogens were very high and it might be further extrapolated for possible high prevalence of food poisoning in Thailand.

### 3. Outbreak of food poisoning in Thailand

There are many food poisoning outbreaks in Thailand. Some important outbreaks are documented in the literature.

#### 3.1. Chemical food poisoning

Chemical food poisoning is due to intake of poison that is existed in the contaminated food. Those poisonous substances are primarily existed and not generated by contaminated pathogens. There are many outbreaks of chemical food poisoning in Thailand. According to the report by Swaddiwuthipong *et al.*, there are several kinds of chemical food poisoning[20].

##### 3.1.1. Insecticide

It can be seen that the most well-known situation is the intoxication from insecticide. Based on the surveillance report[21], Swaddiwuthipong *et al.* reported that “desserts and beverages were found to be the main vehicles, and private home was the most common place for the outbreaks of food poisoning caused by ingestion of insecticide contaminated food.” Swaddiwuthipong *et al.* reported that “methomyl was the most commonly recognized insecticide involved[20]”.

##### 3.1.2. Poisonous plant

According to the report by Swaddiwuthipong *et al.*, poisonous plant poisoning takes the most percentage of detected chemical food poisoning in Thailand[20]. The most common kind of poisonous plant that causes intoxication is mushroom[20]. The second most common is the poisonous plant seed intoxication[20].

##### 3.1.3. Poisonous seafood

Seafood intoxication is another common chemical food poisoning[22]. The problem is due to existed poison in seafood, which is not secondary generated by contaminated bacteria.

According to the study by Swaddiwuthipong *et al.*[20], mussels is identified to be the most common vector in the outbreak. The other common vectors include horseshoe crab and puffer fish (which contain tetrodotoxin)[20].

#### 3.2. Biological food poisoning

Biological food poisoning is due to intake of poison that is generated by the contaminated pathogens (either bacteria or fungi). Those poisonous substances are secondary generated. Similar to chemical food poisoning, there are many outbreaks of biological food poisoning in Thailand.

##### 3.2.1. Bacteria

There are many bacteria that can produce toxin and can be the problem. The good examples include *E. coli* and *Salmonella* spp. The general cases of biological food poisoning due to bacteria in Thailand seem to be similar to other setting around the world[23]. However, there are some interesting situations on the local food.

The first situation is on the local pork fermented sausage, Nham. The staphylococcal enterotoxin is the focused interest. There are some reports on the existence of this kind of toxin in Nham[24,25]. However, it seems that Nham is safe and there has never been outbreak due to Nham in Thailand.

The second situation is on the local made canned bamboo, “Nohmai Kraphong”. There are many cases of intoxication reported from Thailand. This is the well-known situation namely botulism due to *Clostridium* spp. contamination. According to the report by Wiwanitkit, the geographical parameter for this kind of intoxication can be described as “the averages (mean  $\pm$ SD) for % soil moisture, % humus and pH were (0.6 $\pm$ 0.1)% (range 0.5-0.7), (3.0 $\pm$ 0.2)% (range 3-3.2) and 5.2 $\pm$ 0.1 (range 5.1-5.4), respectively[26].” Of interest, the problem of botulism usually leads to respiratory failure and death is common result[27].

##### 3.2.2. Fungi

There are many fungi that can produce toxin and can be the problem. It can also been in Thailand similar to other countries[28]. However, there is no specific report on outbreak in Thailand.

### 4. Conclusion

The food poisoning is an important public health problem that can be seen in any tropical countries including to Thailand.

In the literature, there are many food poisoning outbreaks in Thailand. Those outbreaks include the situations from chemical and biological food poisonings. The problem has to be further under surveillance and control.

### Conflict of interest statement

We declare that we have no conflict of interest.

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