

# BRUCELLOSIS IN THAILAND

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## Introduction

Brucellosis in Thailand was recognized for the first time by the finding of several cases of abortion in pigs of the livestock breeding stations. These pigs were exotic pure breeds which had been imported for breeding purpose. In 1957, all parent stocks were serologically tested and found to react positively. The eradication program was launched at that time by carrying out serum test every two months and slaughtering all the animals with positive reaction. It took almost three years before brucellosis-free herds were established. These free herds have been continuously tested annually in order to eradicate new cases.

## Survey program

From this event, the Department of Livestock Development set up a survey program for the incidence of the disease in cattle, buffaloes, and pigs in the northeastern part during 1959 – 1961 and in the northern part during 1961 - 1965. The reason why a survey program was carried out firstly in the northeastern part was that this region had more animal populations than the others in the country. The number of cattle and buffaloes in the northeastern region is about 50% and pigs account roughly for 30% of the total population. A survey was made in thirty villages of each province. The blood of animals was collected and serum samples were tested by plate agglutination method.

A survey program has been carried out up to the present. The incidence of the disease is shown in Tables 1, 2 and 3.

Table 1 Brucellosis incidence in livestock in northeastern part of Thailand  
(1959 – 1961)

Animals	Number of Tested Animals	Animals with Positive Reaction	% Positive Reaction	Remark
Beef cattle	6,005	60	0.99	
Buffaloes	15,183	83	0.54	
Pigs	800	7	0.77	

Table 2 Brucellosis incidence in livestock in northern part of Thailand  
(1961 – 1965)

Animals	Number of Tested Animals	Animals with Positive Reaction	% Positive Reaction	Remark
Beef cattle	12,727	520	4.08	
Buffaloes	26,778	456	1.70	
Pigs	2,213	12	0.54	

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Dr. S. Srihakim (Chief, Veterinary Diagnostic Laboratory, Khon Kaen, Thailand) read the manuscript of Dr. S. Pipithkul who was unable to attend the Symposium.

Table 3 Brucellosis incidence in livestock in Thailand during 1975 – 1978

Year	Animals	Number of Tested Animals	Animals with Positive Reaction	% Positive Reaction
1975	Dairy cattle	5,593	16	0.29
	Beef cattle	1,653	57	3.45
	Buffaloes	120	3	2.50
	Pigs	1,023	5	0.49
1976	Dairy cattle	5,475	35	0.64
	Beef cattle	9,462	441	4.66
	Buffaloes	330	9	2.73
	Pigs	158	1	0.63
1977	Dairy cattle	6,015	38	0.63
	Beef cattle	4,905	187	3.81
	Buffaloes	232	—	0
	Pigs	3,462	22	0.63
1978	Dairy cattle	10,881	58	0.53
	Beef cattle	3,687	105	2.85
	Buffaloes	378	1	0.26
	Pigs	1,564	14	0.89

Remark: A survey was carried out by Division of Veterinary Research, Department of Livestock Development in Chiangmai, Ayudhaya, Saraburi, Nakornprathom Province and various official Livestock Breeding Stations.

## Diagnosis

### 1 Specimens for examination

The following specimens are sent to our laboratory:

- (1) Foetal lung and stomach content, uterine discharge and milk of abortion cases.
- (2) Semen and sheath washing of bulls.
- (3) Lymph nodes, uterus, seminal vesicles, testicles and udder tissue from carcasses of adult animals.

Direct smears of these specimens are stained by Modified Ziehl–Neelsen stain and examined under microscope. The specimens are also inoculated into guinea pigs and selective media which consist of:

Trypticase soy agar  
 0.1% glucose  
 5.0% bovine serum  
 25 units/ml Bacitracin  
 6 units/ml Polymyxin  
 100 ppm/ml Actidione

Inoculated plates are incubated at 37°C in 10% CO<sub>2</sub> for 5 - 7 days. Guinea pigs are sacrificed 3 and 6 weeks after inoculation. Serum is taken for serology, and the spleen is collected for bacteriological examination.

## 2 Serological tests

The tests that are being practiced for our routine diagnosis are:

Plate or Rapid Agglutination Test, Tube Agglutination Test, and Rose Bengal Plate Test.

In 1978, Complement Fixation Test was firstly introduced into practice by Dr. Kazunori Hashimoto, a veterinary expert on animal health under the Colombo Plan and this test has been continued since then in diagnostic work.

## Antigen and vaccine production

Brucellosis antigens for plate and tube test, and *Brucella abortus* strain 19 vaccine are produced at Veterinary Biological Institute, Pakchong, Nakornrajsima Province. *Brucella abortus* strain 99 is used for antigen preparation. Antigen for milk ring test will be prepared also in the near future.

## Control program

In Thailand, very few cases of brucellosis in humans have been reported. A serological survey for human brucellosis incidence will be carried out in the near future.

In 1977, brucellosis was recognized as a notifiable disease under the Animal Epidemics Act 1956, so that the Department will have full authority to control the disease.

The Department of Livestock Development is taking full responsibility for this program. The Brucellosis Control and Eradication Committee was established by the Department in 1978 to design a program for this purpose. Two stages have been roughly planned to implement the program.

### 1 Stage 1 Prevalence of disease

The Department of Livestock Development has conducted a serological survey for the incidence of the disease in beef cattle, dairy cattle, buffaloes and pigs in all regions of the country which started again from 1975 until now. This survey program is almost sufficient to be analysed. After the results obtained are analysed, the Department of Livestock Development will decide to begin brucellosis control in selected areas and extend this program to cover all parts of the country.

### 2 Stage 2 Disease eradication program

This program will consist of the following plans:

- (1) Test and slaughter of animals with positive reaction
- (2) Test and quarantine of animals with positive reaction
- (3) Vaccination of female calves between 3-6 months of age with *Brucella abortus* strain 19 vaccine.

## Problems

Some of the problems that hinder the control and eradication program are:

### 1 Problems of people

(1) Farmers do not realize the danger of the disease. They do not understand its occurrence, distribution, transmission and economic losses due to the disease, such as decrease of milk yield, abortion and sterility.

When a cow becomes infected she may abort only once or twice and then there is no abortion at all in successive pregnancies. When that cow is tested and found to react positively the owner is asked to slaughter his animal because it carries an infection. He will not do it because he believes that if there are no more abortion symptoms there is no need to slaughter the animal. It is very difficult to convince him because there is no evident loss from this disease.

(2) Most of the farmers are poor and have only a small number of cattle in their herds, so they will refuse to slaughter their infected animals without any compensation.

(3) Most of the small herd owners do not have their own land to raise their animals, so they let them graze together with other herds in the rice field after harvesting and drive them to the forest

during rice planting season. The animals will always be exposed to the infection if some of them show a positive reaction for the disease and as a result the infection will tend to spread to other herds.

## 2 Problems of vaccine and vaccination

If cattle with a positive reaction are kept in a herd they will become the reservoirs of the disease and always shed the organisms within the herd. Although, young female calves are immunized with *Brucella abortus* strain 19 vaccine, experimentally this vaccine gives satisfactory immunizing results but as long as they remain exposed to a large dose of organisms they may become infected after all. This means that vaccination will give limited results if there are no eradication measures for the infected animals.

Many of the herds are very wild and scattered, and sometimes it is very difficult to control them for testing and vaccination, therefore some of them will not be immunized and will easily become infected when they are exposed to the disease.

## 3 Problems of veterinarians

There are two main principles for brucellosis control and eradication program in Thailand: the first is the elimination of animals with a positive reaction and the second is vaccination of young calves. Government veterinarians are responsible for this work but they have no legal power to compel the animal owners to follow their advice. For example, they ask the owners to slaughter their animals but, they cannot force them to do so as the owners make their own decision.

## 4 Problems of government

The government has to spend large sums of money to carry out control and eradication program, especially to compensate owners of cattle with a positive reaction when the animals have to be slaughtered.

We are able to produce enough antigens and vaccines to support this program but we are lacking manpower to work for. Therefore, it seems that this program will be implemented more slowly than it should be.

As we look ahead to complete the task of eradicating brucellosis, the owner's acceptance of program procedures is very important and so is the availability of manpower and large sums of money for this program.

We are more willing to eradicate brucellosis than to live with it and we hope we will not have to wait too long.

## Discussion

**Hashimoto, K.** (Japan): I would like to point out that bacteriological examinations from the organs are as important as serological examinations. Do you carry out bacteriological examinations on aborted fetuses or milk samples in animals with positive reaction prior to starting eradication programs?

**Answer:** There is no effective program for collection of specimens in Thailand. We sometimes carry out such examinations in positive reactors.

**Ogata, M.** (Japan): Do you have any contact with the Public Health Department?

**Answer:** Some people working in slaughterhouses or in laboratories have been thought to be affected with brucellosis (no definite diagnosis). In Thailand, however, diseases such as rabies and leptospirosis are more important.