Virology Section

Progress Report on NAHPI Project

( 1986 - 1990 )

Research activities

Since 1986, nineteen research projects have been undertaken; ten have been completed and nine are underway.

## I. Completed research projects

1 Preparation of fluorescent antibody conjugate for rapid diagnosis of duck virus enteritis

2 Effect of M.P. strain vaccine on Newcastle disease control

3 A micro END method for the detection of antibody to swine fever virus

4 Conjugate preparation for diagnosis of swine viral diseases by indirect fluorescent antibody technique

5 Immunity against swine fever vaccine in sows and maternal immunity in piglets

6 Immunity against swine fever vaccine in piglets and protective level of maternal immunity in piglet before vaccination

7 The protective effect of swine fever vaccine against challenge with a field isolate

8 Research on swine abortion and stillbirth :

- Preparation of antigen for diagnosis of Japanese encephalitis in pig by hemagglutination inhibition test

9 Preparation of bovine leukemia antigen for the agar gel immunodiffusion test

10 Infectious bovine rhinotracheitis infection in Thailand

- Survey of antibodies in the central region
- Isolation and identification of the isolate virus

## II. Current research projects

1 Monoclonal antibody preparation of Newcastle disease virus

2 Preparation of fluorescent antibody conjugate for rapid diagnosis of infectious laryngotracheitis

3 Effect of La Sota vaccine strain on Newcastle disease control

4 Early response and protection of Newcastle disease vaccine La Sota strain

5 A study on ELISA for the detection of antibody to swine fever virus

6 Production of monoclonal antibody against swine fever virus for laboratory diagnosis

7 Research on swine abortion and stillbirth :

- Preparation of fluorescent antibody conjugate for diagnosis of Japanese encephalitis in pig
- Preparation of antigen for diagnosis of porcine parvovirus by hemagglutination inhibition test

8 Distribution of bovine leukemia in dairy cattle in the central region of Thailand

9 Study on bovine ephemeral fever

Diagnostic activities

Diagnosis, both serological and virological, is done in response to direct requests by raisers to assist in proper control. Most of the work is concerned with viral disease of food animals as poultry, swine , sheep, goat and cattle. Diagnosis of some viral diseases has been developed, although some are hampered by a lack of diagnostic reagents.

Problems

1. Lack of some equipment, reference viruses and standard sera needed in virological work, while some of the provided equipment dose not perform properly:
   - The temperature control system in the cool room is a source of trouble. Over the four years the project has been in existence, there have been four major failures. Each of these has caused the total loss of chemical reagents and biological products as well as the loss of much time in preparing replacements.
   - The roller machine does not hold roller culture bottles securely and cells do not grow well.
   - The negative pressure in the germ free area can not be controlled.
2. Further knowledge and experience are needed in some technical areas, in particular, in molecular biology. This problem has been cited since the begining of the project and still remains a problem. As a results, the project has not realized its goals in some areas.

3. Lack of well-trained personnel to carry out work properly in the washing center.
4. A lack of laboratory technicians slows the pace of work.
5. Virological journals are lacking in the library.

Fellowships

Two 6-month fellowships and two one-year fellowships are requested to train staff members in Japan.

Experts

Short-term experts to work on three- to six-month terms for development and improvement of molecular biology are certainly requested.

Future work plan

Proceed according to the five-year (1986-1991) schedule, emphasizing research on :

1. Development of virological methods, in particular fluorescent antibody and enzyme-linked immunosorbent assay for poultry and swine viral diseases, monoclonal antibody and immunoblotting for Newcastle disease, duck virus enteritis and swine fever, for proper diagnosis, strain differentiation and antigenic determination. Each diagnostic method and reagent developed will be evaluated and standardized, and all these techniques and materials judged practical will be transferred to the related agencies throughout the country.
2. Development and improvement of vaccines and establishment of good practice for their application in the field, particular attention will be given swine fever and bovine ephemeral fever.
3. Research on swine abortion and stillbirth by clarifying the actual circumstances of the occurrence and the causative agents of the disease for seeking further preventive and control measures.

Publication :

1. Tantaswasdi, U.; Wattanavijarn, W.; Methiyapun, S.; Kusagai, T.; and Tajima, M. 1988. Light, immunofluorescent and electron microscopy of duck virus enteritis. (duck plague). Jpn. J. Vet. Sci. 50(6) : 1150-1160.

2. Tantaswasdi, U.; Kasheesant, A.; Chaisingh, A.; Sirivan, P. and Parchariyanon, S. 1989. Preparation of fluorescent antibody conjugate for rapid diagnosis of duck virus enteritis. J. Thai. Vet. Med. Assoc. 40(3-4) : 79-83.

3. Tantaswasdi, U.; Sirivan, P.; Chaisingh, A. and Pramoolsinsap, T. 1989. Effect of M.P. strain vaccine on Newcastle disease control. Proceeding of the 8th Annual Livestock Conference. Department of Livestock Development, Bangkok, Thailand. Page 107-113.

4. Chaisingh, A.; Tantaswasdi, U. and Trongwongsa, L. 1989. Isolation and identification of poxvirus from ducks in Thailand. Proceeding of the 8th Annual Livestock Conference. Department of Livestock Development, Bangkok, Thailand. Page 446-448.

5. Pinyochon, W.; Parchariyanon, S.; Tantaswasdi, U. and Morimoto, T. 1990. Preparation of antigen for diagnosis of Japanese encephalitis in pig by hemagglutination inhibition test. Presented at the 9th Annual Livestock Conference, 6-8 September 1990. Department of Livestock Development, Bangkok, Thailand.

6. Parchariyanon, S.; Pinyochon, W.; Methiyapun, P.; Tantaswasdi, U. and Rujtikumporn, B. 1990. The protective effect of swine fever vaccines against challenge with a field isolate. Proceedings of the 7th Congress, of Federation of Asian Veterinary Association, 4-7 November 1990, Pattaya, Thailand. Page 534- 541.

7. Supcharoen, A. 1990. Infectious bovine rhinotracheitis infection in Thailand. I. Survey of antibodies in the central region. Proceedings of the 7th Congress of Federation of Asian Veterinary Association, 4-7 November 1990, Pattaya, Thailand. Page 166-168.

8. Supcharoen, A. 1990. Infectious bovine rhinotracheitis infection in Thailand. II. Isolation and identification of the isolated virus. Proceedings of the 7th Congress of Federation of Asian Veterinary Association, 4-7 November 1990, Pattaya, Thailand. Page 169-175.

9. Parchariyanon, S.; Methiyapun, P.; Pinyochon, W. and Tantaswasdi, U. A micro END method for the detection of antibody to swine fever virus. Submitted for publication in J. Thai Vet. Med. Assoc. (In press).

# ISOLATION AND IDENTIFICATION OF POXVIRUS FROM DUCKS IN THAILAND


## Abstract

Virus from fowl pox suspected ducks was isolated by inoculating a 10% suspension of wart-like lesions into embryonating eggs via the chrioallantoic membrane. The infected chorioallantoic membranes were collected for histopathological study by haematoxylene & eosin staining and then examined under a light microscopy. Structure of virus was also studied by electron microscopy from both wart-like lesions and the infected chorioallantoic membranes.

Pock formation was observed on infected chorioallantoic membranes 6-8 days postinoculation. Histopathological study of infected chorioallantoic membrane revealed epithelial hyperplasia and intracytoplasmic inclusion bodies. Study of virus structure revealed typical form of poxvirus.

# LIGHT, IMMUNOFLUORESCENT AND ELECTRON MICROSCOPY OF DUCK VIRUS ENTERITIS (DUCK PLAGUE)


## ABSTRACT

The oesophagus, liver, spleen, small intestine, thymus and bursa of Fabricius of 12 ducklings inoculated with a local strain of duck virus enteritis virus were examined by light, immunofluorescent and electron microscopy. Gross and microscopical lesions in those organs examined developed in close association with the appearance and distribution of viral antigens of virions demonstrable by immunofluorescent and electron microscopy. After being assembled in the nucleus, viral nucleocapsids seemingly migrated to the cytoplasm. In the cytoplasmic matrix, they acquired electron-dense material to form tegument and then became enveloped by passing through the membrane investing tubules, vesicles or vacuoles. These cytoplasmic spaces containing mature virions coalesced to form larger inclusions. There were two types of inclusions, light and dark, in the cytoplasm, and they apparently corresponded to eosinophilic cytoplasmic inclusions seen in stained preparations or to larger fluorescing granules. The light cytoplasmic inclusions contained numerous virions and tubules, possibly representing overproduced viral envelopes. In the dark cytoplasmic inclusions, virions and tubules which appeared to be in the process of disintegration were embedded in dense material. This type of inclusions was interpreted as representing later stages of inclusion formation and a form of lysosome.


-KEY WORDS : duck virus enteritis, electron microscopy, herpesvirus, pathology.

# PREPARATION OF FLUORESCENT ANTIBODY CONJUGATE FOR RAPID DIAGNOSIS OF DUCK VIRUS ENTERITIS


## Abstract

A fluorescent antibody conjugate for duck virus enteritis was prepared by precipitating immunoglobulin antibody from duck virus enteritis antiserum and conjugating with fluorescein isothiocyanate. The optimum dilution of this conjugate was determined by staining titration and the specificity was tested in tissue sections from six-week-old mixed-breed ducklings which were divided into four groups of 12 each. Ducklings of Group I were inoculated intranasally with 0.5 ml of a preparation of virulent virus containing $10^{5.5}$ $DLD_{50}$/ml. Ducklings of Group II were vaccinated intramuscularly with 1 ml of vaccine containing $10^{5.3}$ $TCID_{50}$ of virus. Group III were similarly vaccinated as Group II and challenged after two weeks with the same dose of virulent virus as Group I. Ducklings in Group IV received no virus and served as controls. One duckling from each group was killed daily from day 1 to 7 post inoculation. Tissue samples from the esophagus, liver, spleen, small intestine, thymus and bursa of Fabricius were collected and examined by the direct fluorescent antibody technique. The adjacent tissues were collected for pathological examination and virus isolation.

From day 3 post inoculation, viral antigen was detected in cells obtained from organs of Group I ducklings. The intensity of fluorescence was clearest in mucosal epithelial cells of the esophagus. Lesions and virus were detected only in Group I ducklings but not in ducklings of Group II, III and IV.

# EFFECT OF M.P. STRAIN VACCINE ON NEWCASTLE DISEASE CONTROL


## Abstract

The effectiveness of Newcastle disease vaccine M.P. strain was evaluated in three experiments. In the first, 60 four-week-old cockerels were divided into four groups of 15. Ten members of Groups 1, 2, 3, and 4 were vaccinated intramuscularly with 0.0, 0.1, 0.2 and 0.3 ml Newcastle disease vaccine M.P. strain respectively. At the same time, the remaining five members of each group were challenged by intranasal inoculation with virulent Newcastle disease virus. In the second experiment, 50 of 125 four-week-old cockerels were injected with 0.1 ml M.P. Newcastle vaccine. On day one after vaccination, 10 vaccinated birds and 10 non-vaccinated controls were placed with 5 non-vaccinated birds challenged with virulent Newcastle disease virus as Group 1. On day two after vaccination, another 10 vaccinated birds were placed with 10 non-vaccinated controls and 5 non-vaccinated birds challenged that day with virulent virus as Group 2. Group 3, 4 and 5 were formed similarly on days three, five and seven after vaccination, respectively. In the third experiment, 10 two-month-old vaccinated chickens of mixed-breed from a farm affected by Newcastle disease were placed with 10 non-vaccinated chickens and 5 chickens challenged with virulent virus.

In the first experiment, vaccination afforded no protection against the disease as the vaccinated birds in all groups died. In the second experiment, 50, 50, 50, 90 and 90 per cent of the vaccinated birds in Groups 1, 2, 3, 4 and 5, respectively, survived. In the third experiment, 90 per cent of the vaccinated birds survived.

# A MICRO END METHOD FOR THE DETECTION OF ANTIBODY TO SWINE FEVER VIRUS


## Abstract

Antibody to swine fever virus is frequently detected by a micro neutralization immunofluorescent test. A more convenient micro adaption of the END (exaltation of Newcastle disease virus) test was developed. An established line of pig kidney cells (CPK-cloned pig kidney) proved more convenient than presuming swine testicle cells for this test. Sera from 338 swine were examined by both teste. There was no significant difference ($P > 0.05$) between the two tests and the correlation coefficient is significantly different than 0 ($r = 0.93$). The micro END test had a sensitivity of 93.8% and a specificity of 86.8% when compared with the micro neutralization immunofluorescent test.

# THE PROTECTIVE EFFECT OF SWINE FEVER VACCINES AGAINST CHALLENGE WITH A FIELD ISOLATE.


## ABSTRACT

Four-week old pigs were vaccinated with various swine fever vaccines and challenged by intraperitoneal inoculation with $10^3$ pig $ID_{50}$ of a virulent strain of swine fever virus isolated in Thailand. The experiment was designed to evaluate the efficacy of these vaccines and the time required for the development of immunity. Three different vaccines, lapinized Chinese strain vaccine, Chinese strain produced in cell culture and GPE⁻ strain produced in guinea pig cell culture were used. Serum neutralizing antibody was titrated before vaccination, before challenge and after challenge. Examinations were made for viremia 10 and 21 days after challenge in surviving pigs and for virus and for antigen (by fluorescent antibody staining) in dead pigs. Pigs receiving 2 of the lapinized vaccines were challenged 3, 6 or 14 days after vaccination. Pigs receiving the other vaccines were challenged only after 3 or 6 days. Vaccinated groups contained 3, 4 or 5 pigs and 10 control pigs were maintained and challenged.

There was no detectable antibody response to any of the vaccines before challenge. However lapinized vaccine A protected all animals against viremia and death at 6 and 14 days after vaccination, lapinized vaccine C gave similar complete protection at 14 days and the guinea pig cell culture vaccine at 6 days. Lapinized vaccine A gave no protection 3 days after vaccination. All other combinations of vaccine and time resulted in partial protection.

# Infectious bovine rhinotracheitis infection in Thailand.
## 1. Survey of antibodies in the central region.


### Abstract.

In twelve provinces of centre region of Thailand, 1780 serum samples ere tested by neutralization test against IBR virus and found 558 amples were positive. (> 1:4)

# PREPARATION OF ANTIGEN FOR DIAGNOSIS OF JAPANESE ENCEPHALITIS IN PIG BY HEMAGGLUTINATION INHIBITION TEST.


## Abstract

Haemagglutination antigen prepared by sucrose-acetone extraction of suckling mouse brain inoculated with Japanese encephalitis virus worked well in the detection of haemagglutination inhibition (HI) titer against Japanese encephalitis virus from pig sera. The antigen has high haemagglutination titer and can be kept at -70 C more than one year.

In tests with this antigen, 85.82 per cent of the sera samples from 381 sows from nine provinces with stillbirth problem were found to have HI titer $\geq$ 1:80. Paired sera samples from 51 of these sows were taken at and after occurrence of stillbirth. Between the earlier and the later samples, 41.17% of the cases was found to have four-fold increase in HI titer, indicating that this group of sows had been infected with Japanese encephalitis which might cause the stillbirth problem.

Infectious bovine rhinotracheitis infection in Thailand.

II. Isolation and identification of the isolated virus.

Abstract.

Bovine herpes virus I (BHV-I) was isolated from a seropositive cow by administration of dexamethasone 40 mg. intravenously, daily for six days. The identification were done by fluorescent antibody technique, electron microscope, and neutralizing by reference hyperimmune serum.

## Bacteriology Section

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Bacteriology Section

Progress Report on NAHPI Project

(1986 - 1990)

1 Diagnostic activities

- Conventional bacteriological culture & identification
- Serological technique
- Antibiotic sensitivity test
- Mycotic diagnosis
- Farm visits upon requested

2 Research activities

(I) Since 1986, Ten research projects have been completed

1. Observation of Campylobacter fetus infection in cattle and buffaloes in some area of Thailand.
2. Determination of the Immune status of cattle and buffales to Haemorrhagic septicemia in Thailand.
3. Development of a serologic test to measure immunity in cattle and buffaloes to Haemorrhagic septicemia.
4. Preparation of antigen for detecting paratyphoid infection in poultry by using microantiglobulin test.
5. Serotypes of Erysipelothrix rhusiopathiae Isolated from swine in Thailand.
6. Outbreaks of Anatipestifer Infection in Thailand.
7. Prevalence of "O" serogroup and mannose resistant haemagglutinims in Escherichia coli strains isolates from piglets Colibacillosis.
8. Antibiotic susceptibilities of Salmonella species and serotypes isolated from domestic animals.
9. Swine pleuroneumonia.
10. Haemophilus parasuis in swine.

I. Research Activities 1991

| No. | Subjects | Achievement % | Responsibility | Remarks (problems) |
|---|---|---|---|---|
| | Bacteriology Section | | | |
| 1. | A Study of Streptococcosis in pigs. | 57 | | |
| 2. | An experiment on Infections coryza vaccine | 27 | | |
| 3. | A Study on serotype of Pasteurella multocida caused fowl cholera in poultry | 70 | | |
| 4. | Preparation of lived attenuated swine Erysipelas vaccine from local strain | 63 | | |
| 5. | Preparation of antigen for detecting paratyphoid infection in poultry by using microantiglobulin test | 95 | | in press |
| 6. | Improvment on modern serological test to determine Protection antibody against HS. in cattle and buffalo | 100 | | |
| 7. | Confirmation Diagnosis of Paratuberculosis in cattle by bacteriological method | 21 | | |
| 8. | Study on Hemophillus pleuropneumoniae | 20 | | |
| 9. | Identification of Pasteurella anatipestifer by APIZYM system | 40 | | |
| 10. | Serotypings of Pasteurella anatipestifer isolated from ducks | 30 | | |
| 11. | Typing of R Plasmid in E.Coli isolates | 15 | | |

# บันทึกข้อความ

ส่วนราชการ Bacteriology Section

ที่ วันที่ Nov. 19,1990

เรื่อง Project Progress Report

Profect title. Preparation of antigen for detecting paratyphoid infection in poultry by using microantiglobulin test.

Budget

Scope of work :

- Stained - Salmonella antigen group B and group C. were prepared from somatic non - motile strain.

- Blood samples, cote cloacal swabs and environmental samples were collected and processed.

- Serum sample were tested by microagglutination & microantiglobulin method.

- Cloacal swabs and environmental samples were cultured by bacteriological method.

- The above mention samples were from farms with precious history of salmonella contamination.

Results

Serological tests were run into 2 streps. Microagglution first and then microantiglobulin test.

Results of microagglutination tests show that 180 suspected birds and 64 poultry were detected out of 1081 serum samples. Where as, using bacteriological culture from cloacal swabs and other samples xhow only 12 positive samples out of 456 samples.

/ Results of.....

# บันทึกข้อความ

ส่วนราชการ.....

ที่.....วันที่.....

เรื่อง.....

Results of Microagglutination test can be obtained with in 24 hrs. Microantiglobulin tests were will not be recorded here because the data were not complete due to the failure of anti - chieken immunoglobulin fale to attach the plate and the time of incubator need longer (48 hrs) than Microagglutination test. The procedure also time cousuming and require more technique and advance equipment.

Benefit :

- Propose serological test in order to detect the subclinical birds caniers or to be a screening test
- This serological test is more valuable and sensitive, save time and space. Result will be obtain with in 24 hrs.
- Benefical effect in salmonella control plan.

Dr. Wallapa Santivatr

Plan for extension 5 years (1991 - 1995)

1 Research Acitvities

1. Major subjects

1.1 Development and improvement of diagnostic methods and reagents for serological, bacteriological and molecular technique in important diseases By seeking the method of more reliable specific and simple - low cost such as ELISA, FA, and DNA prove etc.

The major diseases are :

- Paratuberculosis
- Pasteurellosis
- Hemophilus infection
- Atrophic Rhinitis
- Mycoplasmasis
- Salmonellosis
- Colibacillosis
- Mastitis

and others

1.2 Development and/or improvement of Vaccines as in 1989 and the addition of

- New duck syndrome vaccine
- E. coli vaccine etc.

1.3 Application of "Competitive exclusion" on previnting enteric disease by using caecal content or other product

1.4 Investigation on the important exotic and emergency bacterial diseases and joonoses such as

- Caprine and bovine pleuropnumonia

2 Diagnostic Services attached paper

2 Request.

| | |
|---|---|
| Experts | Four 3 - 6 mouth experts on Molecular technizue, biological product and diagnosis in the field (Paratuberculosis, Atrophic Rhinitis, Mycoplasmosis, Pasteurellosis and anaerobic bacteria etc. |
| Fellowships | Four 6 - 12 months traming in Molecular biological Technique, Serological technique and diagnosis (Paratuberculosis, Atrophic Rhinitis, Mastitis, Hemophilus infectious, anaerobic bacteria and exotic diseases etc.) |

Impremention of material - some equipments, Reagents, reference strains, chemical etc.

Activities in the Future plan

1 Research Activities 1991 -

1. Confirmation diagnosis of Paratuberculosis in cattle by bacterio
2. Study on Hemophilus pleuropneumoniae
3. Serotypings of Pasteurella anatipestifer isolated from ducks
4. An experiment on infections Coryza vaccine
5. Preparation of Newducks syndrome vaccine
6. Development of E.Coli vaccine
7. Isolation of R.Plasmid of Salmonella spp. for epidemiologieal study
8. Studies on the efficacy of whole cell oil adjuvant fowl cholora bacterin in ducks and chickens
9. Studies on the efficacy of purification of a protective antigen from a saline extract of Pastenrella multocida,
10. Protection of chicken against Salmonellosis by orally administered caccal content.

11. Study on Hemophilus parasuis

12. Preparation of Bordetella bronchiseptica antigen for detection of atrophic rhinitis by microplate agglutination test for local strains.

Publication

1. Serotypes of Erysipelothrix rhusiopathiae Isolated from swine in Thailand. 27th Kasetsart University conference, 1989

   Pornpen Pathanasophon  Tipa Tanticharoenyos.

   Tarika Pramoolsinsap

2. Swine pleuroneumouia. 8th Department of Livestock Development conference, 1989

   Wantance Neramitmansook  Chira Vayuchote

   Pairoj Minden  Rachanee Sinlapasith

3. Haemophilus parasuis in swine. 8th Department of Livestock Development conference, 1989

   Wantance Neramitmansook  Wasana Sangsuwan

   Duangjai Jurattanakorn  Tetsuo morozumi

4. Prevalence of "O" serogroup and mannose resistant haemagglutinins in Escherichia coli strains isolates from piglets Colibacillosis June, 7-9 Annual Livestock conference the eighth, 1989

   Wallapa Santivatr  Tipa Tanticharocnyos

   Jatuporn Samitanon

5. Antibiotic susceptibilities of Salmonella species and serotypes isolated from domestic animals. 27th Kasetsart University conference, 1989

   Wallapa Somtivatr  Ladda Mulika

   Pairoj Minden  Tipa Tanticharoenyos

6. Determination of the Immune status of cattle and buffalo to Haemorrhagic septicemia in Thailand. June, 7-9 Annual Livestock conference the eighth, 1989

   Prapahd Neramitmansook  Tarika Pramonlsinsap

   Wantanee Neramitmansook  Donald O. Margan.(2)

   Gordon R. Carter(3)

7. Development of a serologic test to meaasure immunity in cattle and buffaloes to Haemorrhagic septicemia Proc. November, 7th FAVA Congress, Pattaya, 1990

P. Neramitamansook V. Rungvetvuthivitaya

W. Neramitmansook and G.R. Carter

8. Outbreaks of Anatipestifer Infection in Thailand. Proc. November, 7th FAVA Congress, Pattaya, 1990

Pornpen Pathanasophon Tipa Tanticharoenyos

Ladda Trongwangsa Tetsuo Morozumi

| Diseases | Present | Future plan & Remark |
|---|---|---|
| 6. Tuberculosis | -Acid fast staining<br>-Tuberculin test | -Biotype, IHA, ELISA<br>Remark : need technical know how |
| 7. Mycoplasmosis | -Isolation<br>-Agglutination | -Haemagglutination.<br>-C.F. test.<br>Remark : Too much work and high cost in performing these two tests. Test will be conducted only on special request., knowledge |
| 8. Colibacillosis | -Isolation<br>-Agglutination for "O" grouping | - FA.<br>- Immunoperoxidase.<br>- Agglutination for pilityping<br>- ELISA<br>Remark :<br>- Need more time and knowledge |
| 9. Salmonellosis | -Isolation<br>-Agglutination | - Isolation<br>- Microagglutination and microantiglobulin |
| 10. Swine Erysipelas | -Isolation<br>-Tube agglutination Test<br>-AGP | - Isolation<br>- Tube agglutination Test<br>- AGP |

| Diseases | Present | Future Plan & Remark |
|---|---|---|
| 11. Clostridial infection | -Isolation | -Toxin neutralization<br>Remark :<br>-Antitoxin has shortage of shelf-life.<br>-Few cases submission<br>-Lack of antitoxin knowledge |
| 12. Campylobacteriosis | -Isolation<br>-Agglutination | -Haemagglutination<br>Remark :<br>-Few cases submission<br>-Lack of antigen knowledge |

เอกสารวิชาการ ปีที่ 20 ฉบับที่ 1 มีนาคม 2533

# Observation of *Campylobacter fetus* infection in cattles and buffaloes in some area of Thailand

*Indhira Kramomtong*[1]
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*Dilok Gesorsombat*[1]

**Abstract**

During the year 1984-1988, 212 vaginal mucus and preputial wash samples from infertiled cattles and buffaloes, 230 preputial wash samples from bulls in artificial insemination (AI) stations, breeding stations and slaughterhouses, and 3 aborted fetuses were cultured for *Campylobacter fetus*. Neither one of the samples showed positive result. Vaginal mucus agglutination (VMA) test was done on all viginal mucus samples. Four positive and 1 suspected VMA test were detected in a herd of 25 cattles, while 1 positivity was noted in a herd of 11 buffaloes. In addition to culture attempt and VMA test, fluorescence antibody (FA) test was done on samples from 3 aborted fetuses with no positivity. The possibility of false VMA positivity was discussed.

**Keyword (s) : Campylobacter fetus, infection, bovines**

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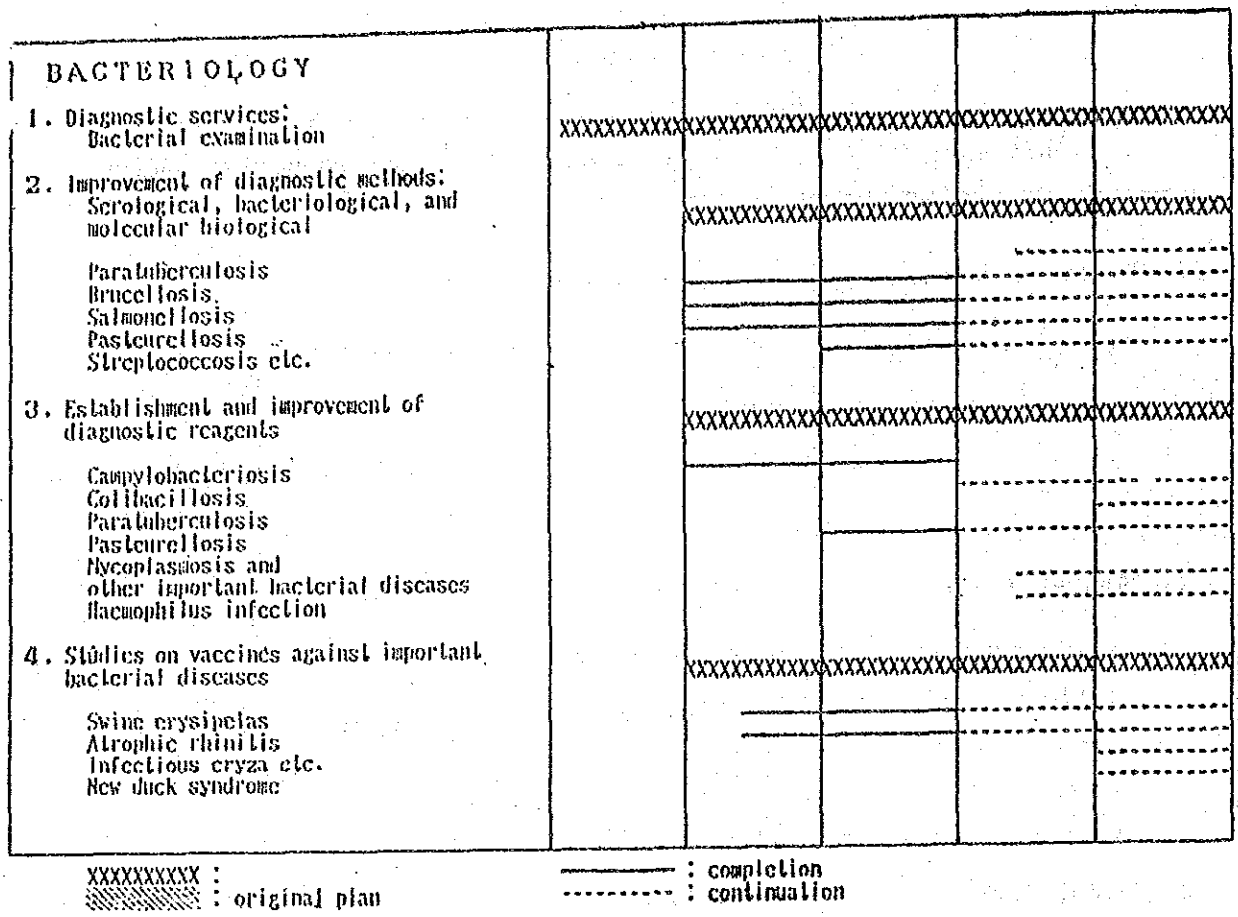
Future Plan

II Diagnostic Activities

General Diagnostic Assistance

| Diseases | Lab Procedure | Future Plan & Remark |
|---|---|---|
| 1. Paratuberculosis | -Bact. isolation<br>-Johnin Test<br>-CFT | - AGID<br>- ELISA<br>Remark :<br>- Need technical know how |
| 2. Pasteurellosis | -Isolation<br>-Indirect haemagglutination test (IHA) | - AGID<br>-ELISA<br>Remark :<br>- knowledge |
| 3. Haemophilus infection | -Isolation<br>-AGID | - 2-ME-Tube Agglutination<br>Remark :<br>- knowledge |
| 4. Streptodoccus | -Isolation | -Agglutination<br>-Precipitation<br>Remark :<br>-Lack of antisera<br>-Incomplete group available in market.<br>- knowledge |
| 5. Atrophic Rhinitis | -Isolation<br>-Tube agglutination test | -Microplate agglutination test.<br>Remark : need antigen, knowledge |

# FIVE-YEARS' SCHEDULE (1)



# DETERMINATION OF THE IMMUNE STATUS OF CATTLE AND BUFFALO TO HAEMORRHAGIC SEPTICEMIA IN THAILAND

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## Abstract

A total of 1738 sera samples were randomly collected among domestic cattle and water buffaloes from geographical regions. Testing for measuring immunity against Pasteurella multocida serogroup B of hemorrhagic septicemia strains was carried out by passive mouse protection test. Antibodies in the sampling sera were demonstrated by a microtiter indirect hemagglutination test. Percentage of positive sera from the passive mouse protection test presented existing immunity against hemorrhagic septicemia in the country.

Sera from 53% (438 of 829) of the cattle and 49% (444 of 909) of the buffaloes protected mice from challenging with a field serogroup B organism. Most of the positive sera also protected mice from challenge with various field isolates of Pasteurella multocida serogroup B. Cross-protection immunity to a capsular type A organism was demonstrated in sera from 21% (6 of 28) of the cattle and 24% (6 of 25) of the buffaloes which had been selected from the first phase of testing. The rate of vaccination according to records was 48% of the total animals. Eighty two percent (324 of 395) of positive sera from the vaccinated group of cattle was significantly ($p<0.05$) higher than 73% (324 of 442) of positive sera from the vaccinated group of buffaloes. Meanwhile 14% (30 of 218) of positive sera from nonvaccinated cattle was not significantly ($p>0.10$) lower than 17% (25 of 149) of positive sera from the nonvaccinated group of buffaloes. During the two year period of the current investigation two outbreaks of hemorrhagic septicemia occurred in two areas of the Northeast region.

# DEVELOPMENT OF A SEROLOGIC TEST TO MEASURE IMMUNITY IN CATTLE AND BUFFALOES TO HAEMORRHAGIC SEPTICEMIA: I. MEASUREMENT OF PROTECTIVE ANTIBODIES AGAINST *Pasteurella multocida* SEROTYPE B IN CATTLE AND BUFFALOES USING AN ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA).

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## ABSTRACT

An enzyme-linked immunosorbent assay (ELISA), using a boiled-culture antigen of *Pasteurella multocida* serotype B:2 was used to detect antibodies to this organism in vaccinated and unvaccinated (before vaccination) cattle and buffaloes. The ELISA results of immune (vaccinated) and non-immune(pre-vaccinates) cattle and buffaloes correlated with survival after direct challenge.

Comparisons between ELISA and the challenge test revealed that the optical density (OD) of 7 cattle sera from the survival-immune group averaged 0.27 ± 0.08, 0.30 ± 0.08, 0.32 ± 0.07, 0.28 ± 0.08, 0.27 ± 0.08, 0.22 ± 0.07, and 0.16 ± 0.07, at the titer 40, 80, 160, 320, 640, 1280, and 2560, respectively. Also the OD of 6 buffalo sera from the survival-immune group averaged 0.43 ± 0.14, 0.38 ± 0.14, 0.35 ± 0.15, 0.31 ± 0.10, 0.25 ± 0.07, 0.20 ± 0.05 and 0.15 ± 0.04, at the titer 40, 80, 160, 320, 640, 1280 and 2560 respectively.

It was concluded that this ELISA procedure can apparently be used in place of the more expensive in vivo (challenge) procedure for determining protective immunity.

Keywords: ELISA, *Pasteurella multocida*, challenge.

# การศึกษาซีโรไทป์ของเชื้อโรคไข้หนังแดงที่แยกได้จากสุกรในประเทศไทย

# Serotypes of Erysipelothrix rhusiopathiae Isolated from Swine in Thailand

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Porhpen Pathanasophon Tipa Tanticharoenyos Tarika Pramoolsinsap

กลุ่มงานแบคทีเรีย สถาบันสุขภาพสัตว์และผลิตสัตว์แห่งชาติ กองวิชาการ กรมปศุสัตว์

Bacterial section National Animal Health and Production Institute

Veterinary Research Division Department of Livestock Development

งานสัตว์ทดลอง สถาบันสุขภาพสัตว์และผลิตสัตว์แห่งชาติ กองวิชาการ กรมปศุสัตว์

Experimental animal unit National Animal Health and Production Institute

Veterinary Research Division Department of Livestock Development

## Abstract

One hundred and thirty isolants of Erysipelothrix rhusiopathiae were serotyping by double agar-gel diffusion precipilation test. All 14 isolants recovered from swine erysipelas between 1982-1987 belonged to serotype 1a. Of 116 isolants which from tonsils of apparently healthy slaughter pigs collected from slaughter houses in various parts of Thailand between 1980-1982 were serotype 1a, 1b, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 21 and N. Serotypes 2, 6, 9, 5, N and 11 were the most prevalent (33.6%, 12.9%, 6.9%, 5.2%, 5.2% and 4.3%), 3.4% each was serotype 1a, 1b and 4, the other 11 serotypes composed of 10.5% of the isolants, they were serotype 8, 12, 21, 7, 10, 13 and 16. The result of thes investigation was not quite the same as Takahashi 1987 which serotype 7 was the most prevalent (54.0%) but the second rank, serotype 2 and 6 were approximately the same rate (31.7% and 9.5%). Serotype 9 which was found rather high frequency (6.9%) in this investigation was reported in fish (6) and 13 isolants were non-typable by the use of antisera from reference strains representing known serotypes of E.rhu. The first-ninth high prevalence serotypes except serotype 9 were reported being isolated from porcine tissue (6,9).

tol positive (1 out of 20 isolates). Physiological characteristics of all isolates were gelatinase positive and urease negative, while 2/20, 3/20, 5/20 and 6/20 were positive to indole test, Camp test, milk proteolysis and coagulated serum proteolysis, respectively. All isolates were highly susceptible to cephalexin, cephaloridine, erythromycin, oleandomycin, tetracycline and dimethylchlorotetracycline. From APIZYM reactions, seven enzymes(phosphatase alkaline, esterase (C4), esterase lipase (C8), leucine arylamidase, valine arylamidase, phosphatase acid and phosphoamidase) were detected from all isolates.

Proc. 7th FAVA Congress, Pattaya, 1990

# Outbreaks of Anatipestifer Infection in Thailand

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## ABSTRACT

Twenty outbreaks of *Pasteurella (Moraxella) anatipestifer* infection in ducks occurred in ten provinces in the central part of Thailand during October 1988 to July 1989. Twenty flocks of 66,000 ducks, 1-day to 18-month-old, showed signs of nasal discharge, respiratory signs, lacrimation, white or green diarrhea, prostration, nervous signs, torticollis and emaciation. Decrease in egg production was noticed in laying ducks. Some animals died. Necropsy findings included ascites, thickening of the air sac, pericardium, epicardium, peritoneum covering the liver and meninx. The carcasses were dehydrated. These changes corresponded with fibrinous inflamation noted by histopathological evaluation. *Pasteurella (Moraxella) anatipestifer* was isolated from internal organs and brain tissue. Their biochemical characterizations were glucose and maltose positive (18 out of 20 isolates), fructose positive (3 out of 20 isolates) and mannose, arabinose, trehalose and sorbi-

Study on Diarrhoeal Diseases in piglets.

# Prevalence of "O" serogroup and mannose resistant haemagglutinins in Escherichia coli strains isolates from piglets colibacillosis

Wallapa Santivatr

Tipa Tanticharoenyos

Jatuporn Samitanon

Bacteriology section

National Animal Health and Production Institute.

Research Division

Department of Livestock Development.

## Abstract

Two hundred and twenty five E. coli strains isolated from piglets ith colibacillosis were determined for "O" serogroup by slide agglutination. est. Of 144 typable isolates, "O8" serogroup was found predominantly ong all isolates followed by 020a 020b, 09, 0141, 0101, 0138 and

The incidence of E. coli serogroup among animal with different age as also determined. Results indicated more isolates were from pigs under 0 days of age and decline between 10-29 days and slightly increased at ostweaning period. Morbidity and mortaligy rate were in high range among eonatal pigs compared to post weaning period. Biotyping was also emonstrated for 110 E. coli strains including the association between )" serogroup and biotype number.

Mannose-resistant haemagglutination (m.r.e.) and culture conditions re disclosed that E. coli isolates possessed haemagglutinin for chicken, ine and bovine erythrocytes from higher to mederate and lesser degree. rial culture in nutrient broth more likely enhanced growth of E. coli an in colonization factor agar (CFA).

# ความไวของยาปฏิชีวนะต่อเชื้อซัลโมเนลล่าที่แยกได้จากสัตว์เลี้ยงชนิดต่างๆ

# Antibiotic susceptibilities of Salmonella species and serotypes isolated from domestic animals


วัลลภา สานติวัตร ลัดดา มูลิกา
Wallapa Santivatr Ladda Mulika
ไพโรจน์ มินเด้น ทิพา ตันติเจริญยศ
Piroj Minden Tipa Tonticharoenyos



## Abstract

Record pertaining 114 cases of Salmonella infection during a 6 year period were retrieved from the Bacteriology section files at the Research Division, Department of Livestock Development. The predominant Salmonella serogroup among these isolates was group B. Predominant cases submitted were from swine sources followed by bovine, poultry, horse and others. S.choleraesuis (28.97%) was the most commonly isolated serotype followed by S.krefeld (9.34%), S.typhimurium (7.47%) S.stanley (5.6%) and S.weltevreden (5.6%). A consistently high percentage of all isolates were resistant to triple sulfa, chloramphenicol tetracycline, terramycin, streptomycin, kanamycin and neomycin. There was an increase in frequency of resistance to ampicillin, cephalothin, polymyxin B, gentamycin and colistin. Sixty-percent of S.choleraesuis were resistant to six or more antibiotics indicated while S.krefeld and other serotype combined presenting 50% and 44% of isolants respectively.



สถาบันสุขภาพสัตว์และผลิตสัตว์แห่งชาติ กรมปศุสัตว์ บางเขน กรุงเทพฯ 10900.
National Animal Health and Production Institute, Department of Livestock Development, Bangkhen, Bangkok 10900

# โรคพลูโรนิวโมเนียในสุกร

## Swine pleuropneumonia

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จิรา วายุโชติ — Chira Vayuchote
ไพโรจน์ มินเด้น — Pairoj Minden
รัชนี ศิลปสิทธิ์ — Rachanee Sinlapasith

สถาบันสุขภาพสัตว์และผลิตสัตว์แห่งชาติ กองวิชาการ กรมปศุสัตว์

Abstract

A distinctive pneumonic lesion was discovered from pig's lungs, dying of swine pneumonia out breaks, which obtained from 5 different farms. From necropsy, lung lesion showed fibrinous pneumonia. The necrotizing fibrinohemorrhagic pneuropneumonea revealed in microscopic finding. The etiologic agent was Haemophilus pleuropneumoniae. Serotyping by plate agglutination test and agar gel diffusion test were shown to be serotype 1, 2, 3, 5. The organism was highly susceptible to ampicillin.

บทคัดย่อ

จากสุกรที่ตายด้วยโรคพลูโรนิวโมเนีย 5 ฟาร์ม ผลการผ่าซากพบลักษณะของปอดและเยื่อหุ้มปอดอักเสบชนิดมีแผ่นไฟบรินปกคลุม ผลทางจุลพยาธิพบลักษณะของปอดและเยื่อหุ้มปอดอักเสบแบบมีเลือดออกและไฟบรินร่วมกับการตายเฉพาะส่วนของเนื้อปอด จากการเพาะแยกเชื้อทางแบกทีเรีย พบเชื้อฮีโมฟิลัส พลูโรนิวโมเนีย ที่เป็นสาเหตุของโรค การตรวจหาซีโรไทป์ของเชื้อที่แยกได้ พบซีโรไทป์ 1, 2, 3, 5 โดยวิธีเพลทเอกกลูติเนชั่นเทส และอาการ์เจลดิฟฟิวชั่นเทส สำหรับการตรวจหายาต้านจุลชีพต่อเชื้อ พบว่า เชื้อเหล่านี้ แพ้ แอมพิซิลินมากที่สุด

# เชื้อฮีโมฟิลัส พาราซูอิส ในสุกร
## Haemophilus parasuis in swine

วันทนีย์ เนรมิตมานสุข วาสนา แสงสุวรรณ
ควงใจ จรัสนากร เทพชูโอะ โมโรซุมิ
กองวิชาการ กรมปศุสัตว์

### บทคัดย่อ

เชื้อฮีโมฟิลัส พาราซูอิส ที่แยกได้จากซากสุกร จำนวน 5 ตัวอย่างเชื้อตรวจพบเป็น ซีโรไทป์ 5 โดยวิธี อาการ์เจลดีฟิวชั่นแทส การทดสอบความไวต่อยาต้านจุลชีพกับเชื้อเหล่านี้ ยาเตตราซัยคลินให้ผลดีที่สุด

### Abstract

Five isolate of Haemophilus parasuis from different pig carcases. The organisms were identified as serotype 5 by agar gel diffusion test. Susceptibility for antimicrobial drug, all of the isolants were sensitive to tetracycline.

### คำนำ

เชื้อ Haemophilus parasuis เป็นเชื้อแบคทีเรีย ที่ต้องการ " V factor " แต่ไม่ต้องการ " X factor " ในการเจริญเติบโต (Biberstein and White 1969) เป็นเชื้อที่เป็นสาเหตุทำให้เกิดโรค Glasser's disease ในสุกร ซึ่งเป็นโรคที่สามารถเกิดได้กับสุกรทุกอายุ มีอัตราการตายสูงมากใน SPF pig และ สุกรที่เคยเกิดในการเดินทาง (Nielsen and Danielsen 1975) คนที่พบโรค Glasser's disease คนแรก คือ นาย K. Glasser ในประเทศเยอรมัน ปี 1910 (Glasser 1910) หลังจากนั้นมีรายงานการพบ เชื้อ Haemophilus parasuis อยู่เป็นประจำ สามารถพบเชื้อตัวนี้ในสภาพ

1. เป็นสาเหตุของโรค Glasser disease คือ มี lesion ของ fibrinous pleurilis, pericarditis, peritonitis, fibrinous polyarthritis, Meningitis
2. พบในสุกรที่ตายแบบ acute septicemia โดยที่สุกรยังไม่มี lesion แสดงให้เห็น
3. พบใน pneumonic lesion ของปอดโดยอยู่ร่วมกับเชื้ออื่น
4. พบเชื้อในระบบทางเดินหายใจของสุกรที่มีสภาพปรกติ (Nicolet 1981)

ในประเทศไทยเคยมีรายงานการระบาดของโรคสมองและเยื่อหุ้มสมองอักเสบในสุกรที่เกิดจากเชื้อ Haemophilus sp. โดย น.สพ.พิพล สุขสายไทยชะนะ ปี พ.ศ. 2520 ในครั้งนี้จะรายงานแต่เฉพาะตัวเชื้อ Haemophilus parasuis

### อุปกรณ์ และวิธีการ

เชื้อ Haemophilus parasuis ที่เป็น Satellite colonies รอบ ๆ เชื้อ Staphylococcus epidermis นำมาเพาะใน serum agar (Brain heart infusion agar + 10% rabbit serum + 0.05% NAD) เป็น pure culture เพื่อดูลักษณะของเชื้อและทดสอบคุณสมบัติทางชีวเคมี นำไปทดสอบหา serotype และนำไปทดสอบหายาต้านจุลชีพ

Progress Report of Parasitology Section

I. Diagnostic Activities

- Identification type of worm eggs
- Identification type of immature parasites
- Identification type of mature parasites
- Identification type of protozoa
- Identification type of livestock insects
- Diagnosis of protozoa by immunoparasitological test, for example
    - IFA test for trypanosomiasis, babesiosis, theileriosis and toxoplasmosis
    - Latex agglutination test for toxoplasmosis

II. Research Activities

1. Serological survey of toxoplasmosis in animals and human
2. Diagnosis of trichomoniasis in cattle and buffaloes by culturing method.
3. Development of antigen for toxoplasmosis diagnosis.
4. Study on controlling snail intermediate host of bovine fascioliasis by weed-eating fish.
5. Comparative diagnosis of toxoplasmosis by IPA and Latex Agglutination test.
6. Anthelmintic activity of thiophanate agginst immature Neoascaris vitulorum
7. A study on epidemiology of liver fluke infection naturally in cattle and buffaloes.

## Proposed Research Activities during 1991

1. Efficacy of ivermectin against ectoparasites and endoparasites of swamp buffaloes
2. Serodiagnosis of bovine fascioliasis by monoclnal antibody
3. Comparative diagnosis of trypanosomiasis by IPA and ELISA test
4. Comparative diagnosis of toxoplasmosis by IPA and Latex Agglutination test
5. Development of Babesia antigen for serodiagnosis of bovine babesiosis
6. Prevalence of theleriosis in dairy cattle
7. Immunity of cattle and buffaloes againet Fasciola gigantica

## Proposed Diagnosis Activities during 1990

1. Diagnosis of trypanosomiasis by ELISA

## II. RESEARCH ACTIVITIES

### PRESENTATION

(1) Equine ehrlichiosis in Thailand. 26th Kasetsart University conference ; 1988.

Darunee Tuntasuvan, Nopporn Sarataphan,
Capt. Nugool Kongkarnjana, Vichitr Sukhapesna,
Horoaki Nishikawa, Supawan Sangiamluksana

(2) Isolation and development of babesia antigen for serological tests. 27th Kasetsart University conference, 1989.

Nopporn Sarataphan, Darunee Tuntasuvan,
Hiroaki Nishikawa, Vichitr Sukhapesna.

(3) Trypanosomiasis in cattle. 8th Department of Livestock Development conference, 1989

Nopporn Sarataphan, Hiroaki Nishikawa,
Darunee Tuntasuvan, Phallop Lukinn (1)

(1) Provincial Veterinary office of Phetchnabun province, DLD.

(4) Indirect immunofluorescence antibody test (IFAT) for Trypanosoma evansi infection. 8th Department of Livestock Development conference, 1989.

Hiroaki Nishikawa, Nopporn Sarataphan,
Darunee Tuntasuvan, Vichitr Sukhapesna

(5) Toxoplasmosis in swine in Thailand. 8th Department of Development conference, 1989.

Darunee Tuntasuvan, Hiroaki Nishikawa,
Nopporn Sarataphan, Vichitr Sukhapesna,
Adisorn Wonglimasawatt (1)

(1): Animal Disease Control Division, Department of Health, BMA.

(6) Preliminary survey on toxopalsmosis in dog, cat and human. 7th National Seminor on Epidemiology, 1989

Hiroaki Nishikawa, Darunee Tuntasuvan, Nimit Triwanatham (1)

(1) South Veterinary diagnostic Laboratory Center, Tung Song Nakhonsrithammarat.

(7) Toxoplasma gondii induced abortion in swine. 16th Annual Veterinary Science conference, 1989.

Supote Methiyapun (1), Hiroaki Nishikawa, Chira Vayuchote (1)

(1) ; Sect, of Pathology, NAHPI.

(8) Possibility to control fascioliasis by anthelmintic drug. 1st Symposium on Ruminant Reproduction and parasitology, 1989.

Darunee Tuntasuvan, Nopporn Sarataphan, Hiroaki Nishikawa, Vichitr Sukhapesna, Dingdao Imsup.

(9) Bovine babesiosis and theileriasis in Thailand. 1st Symposium on Ruminant Reproduction and Parasitology, 1989.

Nopporn Sarataphan, Hiroaki Nishikawa, Darunee Tutasuvan

(10)Effects on natural Trypanosoma evansi infection on milk yield of dairy cattle in Thailand. 1st Symposium on Ruminant Reproduction and Parasitology, 1989.

Nopporn Sarataphan, Hiroaki Nishikawa, Darunee Tuntasuvan, Vichitr Sukhapesna, Kanchana Makrichitr, (1) & Supoth Satjapitak (1)

(1) ; Dept. of Animal Science, Kasetsart University

(11) Preliminary studies on Protozoan Cryptosporidium spp. in cattle - buffalo calves. 14th Annual Veterinary Science Conference, 1987.

Suree Thammasart — Monaya Ekgatat

Bamrung Maisuporn — Yodyot Meephuch

(12) Control of cattle and buffalo liver fluke through control of an intermediate host (Lymnaea snail) 8th Annual Livestock Conference, 1989.

Tasanee Chompoochan — Suree Thammasart

Bamrung Maisuporn

(13) A study on the prevalence of liver fluke infection in cattle and buffaloes in Thailand. 8th Annual Livestock Conference, 1989.

Vichitr Sukhapesna — Darunee Tuntasuvan

Nopporn Sarataphan — Kingdoa Imsup

(14) An outbreak of toxoplasmosis in breeding swine. 9th Annual Livestock Conference, 1990

Nopporn Sarataphan — Darunee Tuntasuvan

Vichitr Sukhapesna — Hiroaki Nishikawa

(15) Serological survey of trypanosomiasis and babesiosis in cattle and buffaloes in Thailand. 7th Congress of Federation of Asian Viterinary Association (FAVA), 1990

Hiroaki Nishikawa — Nopporn Sarataphan

Darunee Tuntasuvan — Praphad Neramitmansuk

(16) Possibility to control fascioliasis by anthelmintic drugs. 1st Symposium on ruminant reproduction and parasitology. 1989.

Darunee Tuntasuvan — Vichitr Sukhapesna

Kingdoa Imsup — Hiroaki Nishikawa

(17) Bovine babesiosis and theileriosis in Thailand. 1st Symposium on ruminant reproduction and parasitology 1989.

Nopporn Sarataphan — Hiroaki Nishikawa

Darunee Tuntasuvan

(18) Effect of natural Trypanosoma evansi infection on milk yield of dairy cattle in Thailand. 1st Symposium on ruminant reproduction and Parasitology. 1989.

Nopporn Sarataphan — Hiroaki Nishikawa

Darunee Tuntasuvan

"Presentation in Preparation"

(1) Preliminary sero-survey on Trypanosoma evansi Babesia bovis and B.bigemina infection in cattle and buffaloes.

(2) Efficacy of Samorin and Berenil on bovine trypanosomiasis.

(3) Outbreaks of swine toxoplasmosis.

(4) A field study on bovine trypanosomiasis.

(5) Strongyloidosis in experimentally infected swine.

In Print

(1) Equine ehrichiosis in Thailand. Kasetsart Animal Hospital. Journal, in print (Thai)

(2) Preliminary survey on toxoplasmosis in dogs, cats and man. The Journal of parasitilogy and Tropical Medicine Association of Thailand, in print (Thai). J. Tropical Medicine + Parasitology 12 (2) : 53-59. 1989.

(3) A study on the prevalence of liver fluke infection in cattle and buffaloes in Thailand. J. Thai Vet. Med. Assoc. 40 (1-2) : 13-19. 1989.

## Pathology section 1990

OFFICER

Veterinarian

1. Dr. Somboon Sutherat.
2. Dr. Chira Vayuchote.
3. Dr. Busanee Chanpresert.
4. Dr. Surapong Wongkhasemchit.
5. Dr. Pacharee Thongkumkoon.
6. Dr. Ladda Trongvongsa
7. Dr. Tuongthong Patchimasiri

Medical Scientist.

1. Mrs. Raenu Pothipan.
2. Miss. Somechit Ruchikuan.

Permanent

Worker

1. Mrs. Porncip Dorgyam.
2. Mr. Suvit Sila.

Temporary

Paraveterenarian.

1. Phisit Phanprak.

Worker

1. Gunyit Sangajan.

Medical Scientisit

1. Uthonrat Phopad.

Progress of the project.

1. Progress of building, equipments and material, glasswares and chemicals.

2. Assignments of experts and counterparts.

3. Activity by field 1987-1988 (follow the detail)

3.1 Pathology diagnosis work volums three time of the previous amount.

3.2 Pathology diagnosis technique:-

a. Hemato-pathology technique:-

b. Autopsy technique

c. Histo-pathology technique, by routine stain (Haematoxylins and Eosin stain) and special stain were provided by expert.

d. Have done a little for electron-microscope technique.

3.3 Research Activity (1987-1990)

I. Completed research projects

1.1 Incidence and Pathology of Epidemic discases of Animal in the Central Region of Thailand 1987-1988.

1.2 Pathological diagnosis by application of Immunoperoxidase of Swine fever.

1.3 Facial Ecze,a dosease om sheep.

II Current research projects.

1. Study on pathogenesis of important disease for the betterment of diagnosis and control measures.

1.1 Aujeszhy's disease.

1.2 Swine fever

1.3 Fowl cholera

1.4 New Duck Syndrome

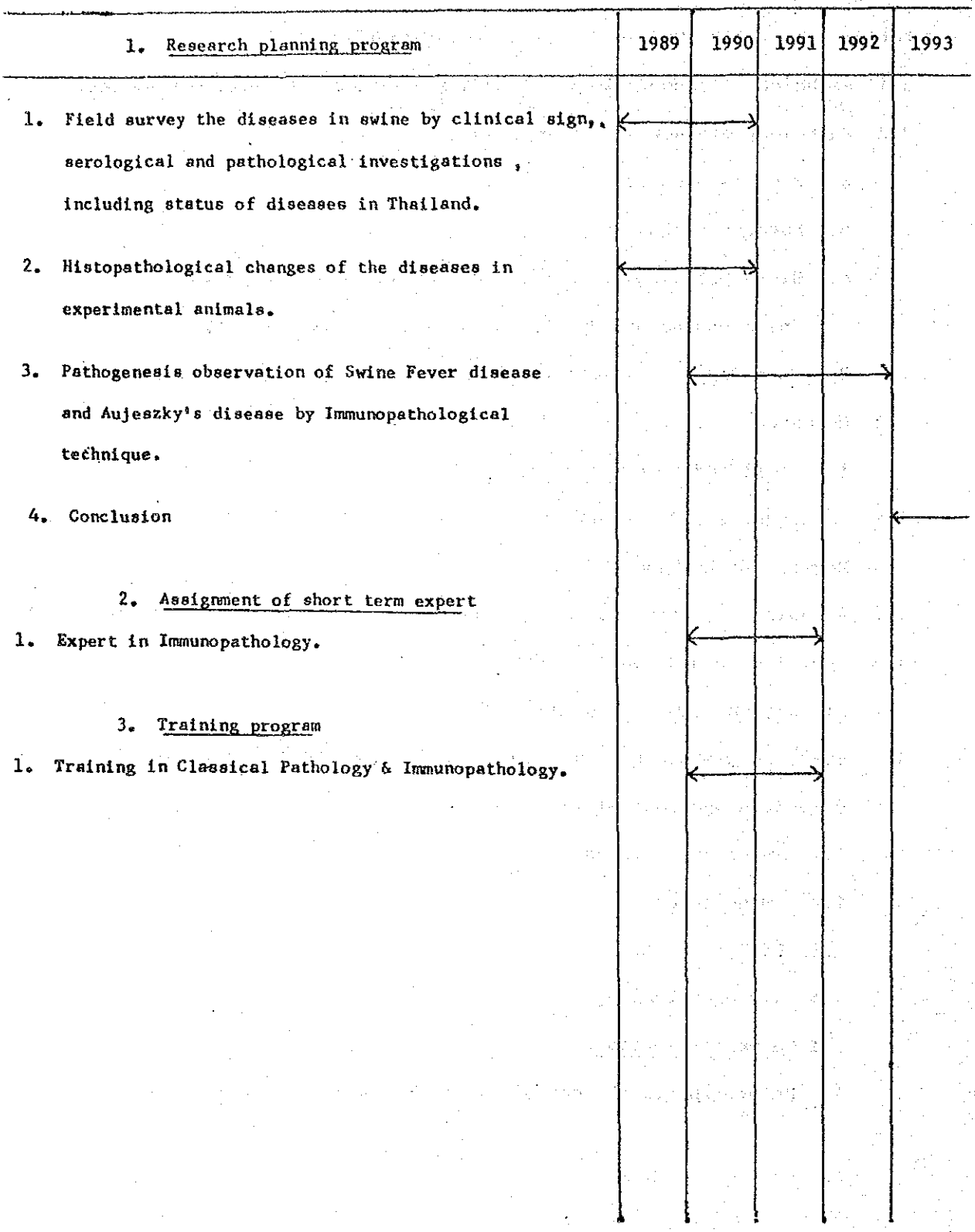
III Cooperative research

1. Patcrogenisis and pathology of Paratuberculosis in cattle.

AUJESZKY'S DISEASE AND SWINE FEVER DISEASE

Dr. Somboon Sutherat

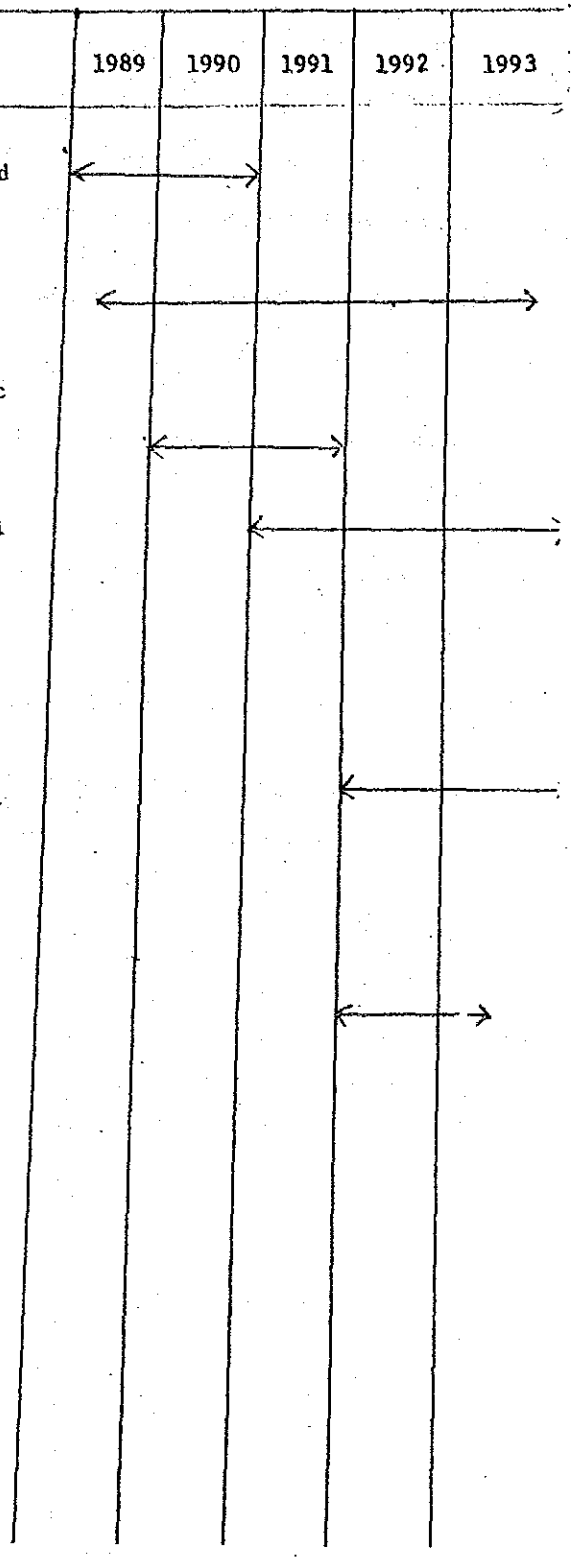
Dr. Busanee Chanprasert



FOWL CHOLERA

Dr. Pacharee Thongkumkoon

1. Research planning program




1. Continue collecting data from naturally infected case.
2. Microscopic lesion observation.
3. Finding persentege and comparison of microscopic lesion in each organ specific.
4. Study on using immunopathological, histochemical technique about the relation between lesion and bacteria, endotoxin.

2. Assignment of short term experts

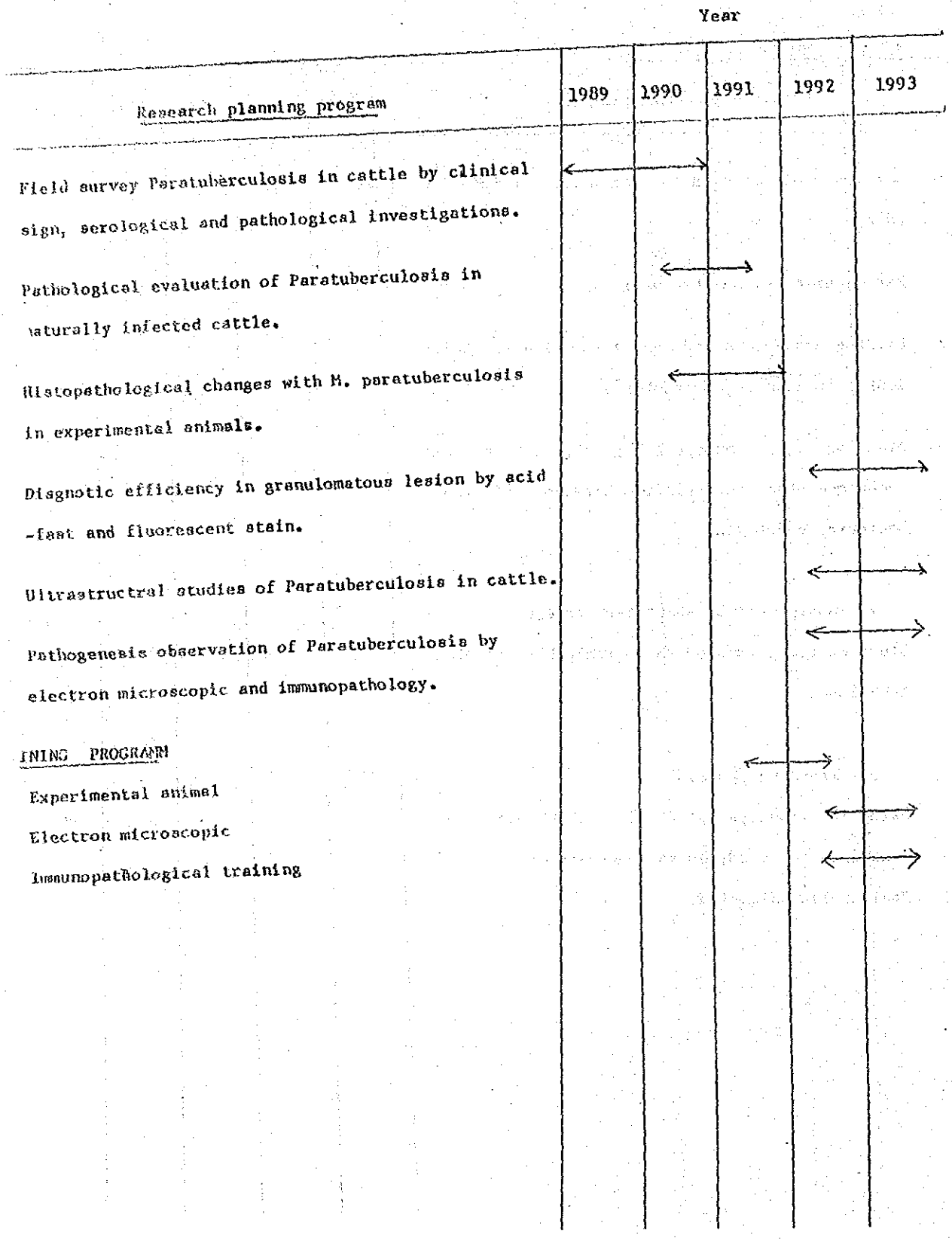
Study on using immunopathological, histochemical technique.

3. Training program

Using the immunopathological, histochemical technique for study on pathogenesis of Pasteurella multocida.

Paratuberculosis in cattle

Dr. Chira Vayuchote



NEW DUCK SYNDROME

Dr. Ladda Trongwongsa

| Research planning program | 1989 | 1990 | 1991 | 1992 | 1993 |
|---|---|---|---|---|---|
| 1. Survey and Epidemiological study on New Duck Syndrome. | ← | → | | | |
| 2. Histopathological study in experimented animals. | | ← | → | | |
| 3. Develope new technique for diagnosis. | | | | ← | → |

Assignment of short term expert. (No)

Training program (No)

## Diagnostid activities

| | 1988 Number of cases | 1989 Number of cases |
|---|---|---|
| 1. Autopsy & Organ examination. | | |
| 1.1 - Autopsy | 917 | 1012 |
| 1.2 - Organ examination | 5,797 | 5060 |
| 2. Histopathology. | | |
| 2.1 - Procession of tissue organ. | 11,134 | 10,120 |
| 2.2 - Making microscopic slides | 19,994 | 18,680 |
| 2.3 - Microscopic observation | 11,394 | 14,290 |
| 3. Haematology. | | |
| 3.1 R.B.C. Count. | 422 | 462 |
| 3.2 W.B.C. Count | 422 | 462 |
| 3.3 Hemoglobin examⁿ | 422 | 462 |
| 3.4 Hematocrit examⁿ | 422 | 462 |
| 3.5 Differentiation of W.B.C. Count. | 422 | 462 |
| 4. Electron microscope | | |
| 4.1 Procession of tissue | 1,414 | 219 |
| 4.2 Making Tissue block. | 1,414 | 344 |
| 4.3 Making slides. | 108 | 194 |
| 4.4 Observation samples. | 72 | 117 |

## Problem

1. Lack of some equipment such as.
   1.1 The Computer for record pathological lesion of animal diseases.
   1.2 Blood cell count instrument.
2. Lack of pathological journals in library.
3. Further knowledge and experience are needed, such as electronmicroscope technique, special stain in patho logical lesion.

## Fellowships.

Two 6- month fellowship and one 1-year fellowship are requested to training in Japan.

## Experts

Short-term experts to work on electron microscope and Immuno-paraffin tissue.

## Future work plan

1. Study on pathogenesis and pathology of duck disease for the betterment of diagnosis and controle measures, such as Duck cholera, Salmonellosis, Duck enteritis,and Afla toxin in duck.
2. Avidin biotin peroxidase complex methods for diagnosis of bacterial pneumonia in pig.

# IMMUNOLOGY AND SEROLOGY SECTION

STAFF

| | | | |
|---|---|---|---|
| 1. | ดิลก | เกษรสมบัติ | หัวหน้ากลุ่มงาน |
| | Dilok | Gesornsombat | D.V.M. Chief, *veterinarian* |
| 2. | บรรจง | อภิวัฒน์นากร | นายสัตวแพทย์ |
| | Bunchong | Apiwatnakorn | B.Sc., D.V.M., DAP&E, *veterinarian* |
| 3. | มนยา | เอกกัตร์ | นายสัตวแพทย์ |
| | Monaya | Ekgatat | B.Sc., D.V.M., DMM., *veterinarian* |
| 4. | สุรีย์ | ธรรมศาสตร์ | นายสัตวแพทย์ |
| | Suree | Thammasart | B.Sc., D.V.M., M.P.H., *veterinarian* |
| 5. | ดวงใจ | จุรัฐนากร | นายสัตวแพทย์ |
| | Duangjai | Jurattanakorn | D.V.M., *veterinarian* |
| 6. | สมชาย | ช่างทอง | สัตวแพทย์, *Paraveterinarian* |
| | Somchai | Charngthong | Cert. in Vet. Sc., B.Sc. |
| 7. | สมหมาย | หอมสวาท | ลูกจ้างชั่วคราว, *Scientists* |
| | Sommai | Homswat | B.Sc.[Temporary project officer] |

IMMUNO-SEROLOGY SECTION

| ACTIVITIES | 1st YEAR DEC 1986~ | 2nd YEAR DEC 1987~ | 3rd YEAR DEC 1988~ | 4th YEAR DEC 1989~ | 5th YEAR DEC 1990~ |
|---|---|---|---|---|---|
| 1. Diagnostic services of important infectious diseases | XXXXXXXXX | | | | XXXXXXXXX |
| Brucellosis | | | XXXXXXXXX | XXXXXXXXX | ..... |
| Atrophic rhinitis | | | XXXXXXXXX | XXXXXXXXX | ..... |
| Paratuberculosis | | | XXXXXXXXX | XXXXXXXXX | ..... |
| Camphylobacteriosis | | | | | ..... |
| Parvovirus infection | | | XXXXXXXXX | | |
| Bluetounge | | | | | ..... |
| Japanese B encephalitis | | | | XXXXXXXXX | ..... |
| Leptospirosis | | | | | ..... |
| Trypanosomiasis | | | | | ..... |
| 2. Improvement and development of serological diagnostic methods | XXXXXXXXX | | | | XXXXXXXXX |
| Paratuberculosis | | XXXXXXXXX | XXXXXXXXX | XXXXXXXXX | ..... |
| Brucellosis | XXXXXXXXX | XXXXXXXXX | XXXXXXXXX | XXXXXXXXX | ..... |
| Trypanosomiasis etc. | | | | XXXXXXXXX | ..... |

IMMUNOLOGY AND SEROLOGY SECTION

1 9 9 0
(OCTOBER 1989-SEPTEMBER 1990)

Research Activities

| No. | Subjects | Achievment % | Responsibility (Name) | Remarks (Problems) |
|---|---|---|---|---|
| 1 | Specificity of Johnin and complement fixation test for detecting paratuberculosis. | 20 | Dilok Gesornsombat<br>Monya Ekgatat | |
| 2 | Changes of antibody titers of infected bovine paratuberculosis by complement fixation test. | 5 | Dilok Gesornsombat<br>Monya Ekgatat | |
| 3 | The preparation of specific Brucella antigen for complement fixation test. | 40 | Dilok Gesornsombat | |
| 4 | Brucella antigen development for hemolysis in gel test. | 5 | Monya Ekgatat | |
| 5 | Serological survey on parvovirus of swine in the central part of Thailand. | 10 | Suree Thammasart<br>Somchai Charngthong | |
| 6 | Antibody titers of Japanese B encephalitis in swine in the central of Thailand. | 10 | Suree Thammasart<br>Somchai Charngthong | |
| 7 | Antigen preparation against cattle tick. | 5 | Bunchong Apiwatnakorn | |
| 8 | Development of liver fluke antigen for serological test. | 5 | Bunchong Apiwatnakorn | |
| 9 | Study the immunity against Trichinella spiralis in experimentally infected swine<br>cf. Parasitology section | 65 | Suree Thammasart<br>Bunchong Apiwatnakorn<br>Monya Ekgatat<br>Dilok Gesornsombat | |
| 10 | Preparing Trypanosomiasis antigen of swine<br>cf. Epidemiology section | 65 | Chit Siriwan<br>Dilok Gesornsombat<br>Bunchong Apiwatnakorn<br>Suree Thammasart | |

IMMUNOLOGY AND SEROLOGY SECTION

1 9 9 1
(OCTOBER 1990-SEPTEMBER 1991)

Research Activities

| No. | Subjects | Achievment % | Responsibility (Name) | Remarks (Problems) |
|---|---|---|---|---|
| 1 | Antigen preparation against cattle tick. | 5 | Bunchong Apiwatnakorn | |
| 2 | Development of liver fluke antigen for serological test. | 5 | Bunchong Apiwatnakorn | |
| 3 | The preparation of specific Brucella antigen for complement fixation test. | 40 | Dilok Gesornsombat | |
| 4 | Brucella antigen development for hemolysis in gel test. | 5 | Monya Ekgatat | |
| 5 | Serological survey on parvovirus of swine in the central part of Thailand. | 10 | Suree Thammasart<br>Somchai Charngthong | |
| 6 | Antibody titers of Japanese B encephalitis in swine in the central of Thailand. | 10 | Suree Thammasart<br>Somchai Charngthong | |
| 7 | Skin and serological test for tuberculosis in dairy cattle.<br>cf. Epidemiology section | 10 | Dilok Gesornsombat<br>Monya Ekgatat | |
| 8 | Study on paratuberculosis in Thailand.<br>cf. Bact., Patho., Epid. section | | Dilok Gesornsombat<br>Monya Ekgatat | |
| | 8.1 Specificity of Johnin and complement fixation test for detecting paratuberculosis. | 25 | Dilok Gesornsombat<br>Monya Ekgatat | |
| | 8.2 Changes of antibody titers of infected bovine paratuberculosis by complement fixation test. | 10 | Dilok Gesornsombat<br>Monya Ekgatat | |

IMMUNOLOGY AND SEROLOGY SECTION

1 9 9 2 - 1994
[OCTOBER 1991-SEPTEMBER 1992]

Research Activities

| No | Subjects | Achievment % | Responsibility (Name) | Remarks (Problems) |
|---|---|---|---|---|
| 1 | Development of Brucella abortus antigens for use in seroduagnosis.<br>การพัฒนาบรูเซลล่า อบอร์ตัส แอนติเจนสำหรับการวินิจฉัยโรค<br>1.1 Identification and characterization of specific antigens.<br>การแยกคุณลักษณะของแอนติเจนจำเพาะ<br>1.2 Specific monoclonal antibodies preparation for diagnosis.<br>การเตรียมโมโนโคลนอล แอนติบอดีย์จำเพาะสำหรับการวินิจฉัยโรค<br>1.3 Comparison chromosomal DNA of Brucella abortus reference strain and field isolated strain.<br>เปรียบเทียบโครโมโซมอลดีเอ็นเอของเชื้อบรูเซลล่า อบอร์ตัส ชนิดรีเฟอเรนซ์สเตรนและเชื้อที่แยกได้จากท้องที่<br>1.4 Development of an immunoassay system for diagnosis.<br>พัฒนาระบบการตรวจทางอิมมูโนเอสเสเพื่อการวินิจฉัยโรค<br>1.5 Field evaluation by using ELISA.<br>การใช้อีไลซ่าตรวจหาร่องรอยโรคในท้องที่ | | Monya Ekgatat<br>Dilok Gesornsombat | |

Request

The NAHPI project has been worked since 1986, but the first time Immunology and serology section had not been accepted to include in NAHPI project, the reason is not know. This section just included in NAHPI project and has some support to this laboratory *[Few budget, limited equipments and one fellowship for training in Japan]*. Now the JICA will have the mission team coming to evaluate this project. In each year and the past year, many services to farmers have been done by this section, using old equipments and no advance technology and also no expert to take care. For these reasons, the immunology and serology section would like to request :

1. Need some short term experts who have experiences in diagnosis of animal diseases [ *such as Paratuberculosis etc.*]. advance technology in immuno-serology diagnosis, veterinary immunology and molecular researches [*for supervising of diagnostic systems and researches in the field of veterinary immuno-serology*].

2. The equipments will list below
   - ELISA set [with reader and automatic washer]
   - computer and printer sets for ELISA set, analyse and collect the data in diagnostic and research works.
   - oxygen and carbondioxide incubator
   - deep freezer [-80 to -100 °C]
   - autoclave 80 litre, automatic
   - dispensor 1.5 ml., 6.0 ml.
   - magnetic stirror + hot plates + stirring bar sets
   - pipet aid
   - micropipette, digital 500-100 µL, digital adjustable volume

- incubator 515 litre, temp. 25-50 °C, 2 sets [this section has 1 set but not enough]
- inverted microscope
- immunoblot apparatus, power supply and nitrocellulose membrane for immunoblotting
- electro-elutor
- column chromatography set
- centrifuge, refrigerated [-10 to -37 °C], low speed [7,000-10,000 rpm], 80 litre
- refrigerated microcentrifuge, high speed
- shaker and rotate for flash, tubes
- liquid nitrogen tank
- polysulfone filter holder and sterility test unit 100x270 Hmm. [3 set]
- handy sonic
- circular motion shaker
- vacuum pumps 650 mmHg
- fume hoods w900xd750xh2300 mm.
- culture flask
- dispensing syringes 0.2-2.0 ml.
- micropipette, digital adjustable volume 0.1-10 uL, include tips [appendoft]
- and other new equipments which employed necessary in diagnosis and researches.

In the past, this section had only one incubator, one refrigerator [4 °C], one water bath and some multichannel pipette but the other necessary equipments not yet provided from this project. All the requests will help this section work smoothly, successfully and improve the diagnosis and research works in the future.

Equipments supplied by JICA

| | | | |
|---|---|---|---|
| 1987 | (1) incubator, digital HD-10-C | 1 | set |
| | (2) multichannel micropipette 5-50 $\mu$L | 1 | set |
| | (3) multichannel micropipette 50-200 $\mu$L | 1 | set |
| 1989 | (1) digital timer | 2 | set |
| | (2) water bath shaking set | 1 | set |
| 1990 | (1) multichannel micropipette 50-200 $\mu$L | 1 | set |
| | (2) refrigerator 4 $^{\circ}$C | 1 | set |

Training followship

(1) Dr. Monaya Ekgatat

1 year [August 28, 1989 - August 23, 1990]

Individual Training Course in Veterinary Immuno-serology

Physiological Actives Substances Research Laboratory

[chief : Dr. Y. Yokomizo], Biological Products Research

Division, NIAH

1986 - 1987

- A study on the problem of sarcocystis in experimentally infected swamp buffalo calves.

  : Sarcocystis sporocysts preparation

  : Experimentally induced sarcocystosis in buffalo calves (Bubulas bubalis)

  1. Clinical and Pathological studies
  2. Hematological and serum biochemical changes.
  3. Serological study on experimentally induced sarcocystosis in buffalo calves.

Kasetsart Veterinarians ISSN 0125 - 5169

Vol.7, No 3, October 1986

Vol.8, No 1, February 1987

Vol.8, No.2, June 1987

(Immunology - serology Section, Parasitology Section and Biochemistry Section)

- Study on humoral antibody titers of vaccinated brucellosis strain 19 - heifers.

  Kasetsart Veterinarians ISSN 0125 - 5169

  Vol.8, No.2, June 1987

- Paratuberculosis : Sero - epidemiological studies of paratuberculosis in dairy cattle.

  The 14th annual Veterinary Sciences Conferences

  25 - 27 November 1987 : TVMA

- Cryptasporidiosis : Preliminary studies on protozoan Cryptosporidium spp. in cattle buffalo calves.

  The 14th annual Veterinary Sciences Conferences

  25 - 27 November 1987 : TVMA

1989

- Immunoglobulin M and Immunoglobulin G titers of vaccinated brucellosis strain 19 heifers.

J. Thai. Vet. Med. Assoc.

Vol. 40, No. 3-4, September - December 1989.

1990

Submit for presentation.

- Detection of Trypanosimiasis antibodies in domestic animals using ELISA technique

- Horseradish Peroxidase - conjugated preparation for trypanosomiasis diagnosis in domestic animals using ELISA

( Joint - project : Parasitology Section and Immunology - Serology Section )

The 29th annual Agriculture Conference

4 - 7 February 1991

Conclusion

- The comparison between heat and 2 - mercaptoethanol for destroyed immunoglobulin M in vaccinated Brucella abortus strain 19 heifer.

- The addition of EDTA for brucellosis diagnosis in cattle.

Biochemistry Section

Progress report on NAHPI Project 1986-1990

I Research Activities.

Several projects were carried out by the staff members in biochemistry section during 1986-1990. These research projects are as the following:

1 Completed research projects

1.1 Determination of Aflatoxin residues in chicken tissues

1.2 Detemination of Aflatoxin residues of chicken tissues in Thailand.

1.3 Detemination of Aflatoxin contamination in duck feed by using sep-pak silica cartridge

1.4 Transmission of aflatoxin $B_1$ into eggs of laying hens fed aflatoxin $B_1$ contaminated diets with polyvinyl pyrolidone and/or diatomaceous earth

1.5 Aflatoxin $B_1$ residues in tissues of ducklings given feed containing aflatoxin and ammonium carbonate or propionic acid.

1.6 Aflatoxin and Toxic residue: its influence with regard to jeopardize the chicken and tissues

1.7 A determination of insectecide residue in liver of swine, cattle and buffalo

1.8 Serum copper concentration of cattle in Thailand.

1.9 Study on biochemical values in cattle serum (not perbleshed)

1.10 Affatoxin detosxification by mycoinhibitoe (not published)

2. Current research projects

2.1 A study of Copper defficiency in cattle

Attempt had been made to investigate the copper defficiency in cattle in several areas in Thailand. This project was carried out by the recommendation and aduice from Dr.M.Hayashi who act as a long term expert in the field of clinical biochemistry.

2.2 A study of an abnormal hair growth in cattle and buffalo

Owing to the relevant reports of abnormal hair growth occured in cattle and buffaloes in several provinces. The abnormal hair growth is considered to be an endemic disease occured in the herd, the sick animals showed the decolor hair, long and poor hair growth. The blood sampling were collected from those animals that showed the symptoms the serum samples were analyzed by biochemisty staff in order to identify the primary cause of the disease.

2.3 The relationship of chlorenated hydrocarbon insecticides level in concentrate feed and milk of dairy cow.

2.4 A quantitative analysis of chlorinated hydrocarbon insecticides in poultry and swine commercial feed

2.5 Effect of aflatoxin $B_1$ in ducklings

a) Effect on the blood component

b) Effect on hepatic microsomal drug metabolizing enzyme

c) Effect on liver lesion

d) Effect on residues in tissues

2.6 Determination of aflatoxin in animal feed, serum and tesues by using ELISA method

2.7 Studies on Paratuberculoses of Cattle in Thailand [Biochemical change]

The abstract of terminated projects are attached in this paper

II. Diagnostic Services

One of the main objective of biochemisty section is to offer the chemical analysis for animal feed and tissue samples that are requested by the farmers and goverment section. In order to identify the causative agent of the diseases or problems occured in livestock in the country the diagnostic service could performed in 2 aspects :-

2.1 Clinical biochemistry

In case of the retard growth, poor condition or animals could not maintain thier healthy life. There must be some problems occured, metabolic disorder or poisoning which jeopardized their nomal health. The primary investigation is to perform an analysis for blood chemistry such as protein, carbohydrate, lipid, mineral and vitamins content

2.2 Toxic substance

Aflatoxicosis is a common disease in livestock and cause the great economic loss of animal industry in the tropical countries. During the past year there were a lot of requests for aflatoxin analysis from feed and animal tissues. Our laboratory cooperated with other sections to identify the aflotoxicoses problems occured during the previous year.

The biochemistry laboratory performed the quantitative analysis of pesticides such as chlorinated hydrocarbon, organo plosphate and carbamate insecticides.

The pesticides resedue in animal tissue is the great problem for the exportation of chicken and meat. Presently Thailand consumed large amount of pesticides for promotion of agricultural products. As a reserlt, there are the wide contamination in plant and animal product. There are a great demand for pesticide analysis of feed and animal tissue in this laboratory during the past year.

III. Future plan

Biochemistry section already established the five years schedule for toxicological and biochemical research during 1986-1991. However some project could not start because lack of some accessory part of essential equipment in this laboratory. The research projects will emphasize on the follwing topics.

1. Climical Biochemistry

1) Establishment of standard values of blood and urea components of healthy animals.

2) Level of minerals of nutritional disorder , such as Cu, Fe, Zn, Se, Mo etc.

3) - Abnormal hair growth in cattle and buffalo

- Biochemical analysis of serum samples from cattle and buffalo with abnormal hair growth in the central region of Thailand.

2. Toxic substances

1) Determination of level of heavy metal in feed and animal tissues

2) Effects of feed composition on the toxicity of aflatoxin

3) Toxicity effect of aflatoxin to chicken with different levels of protein content

4) Preparation of aflatoxin $B_1$ antibody for ELISA determination in Thailand

5) Comparative studies on metabolism and toxicity of aflatoxin $B_1$ in poultry

3. Pesticides and Feed additives

1) Residue analysis of organochlorine pesticide in feed and animal tiseus

2) Accumulation of data for future control and research concerned with pesticides

3) Determination of feed additives : Vitamin Mineral and Antibiotics.

IV. Problems

Equipment

There are many functions in biochemistry section including research and diagnostic services during the past year. This laberatory has a limitation for several biochemical analysis because the lack of some essential parts of many equipment, there for the investigation could not carried out and the problems remained emsolve.

The following equipments and accessory parts are need :

1. Complete set of Densitometer (UV visible wave length)
   - To measure the quantity of aflatoxin when analyze by thin layer chromatograghy
2. U.V. Vis Spectrophotometer, double beams
   - for clinical biochemistry analysis
3. Liquid Chromatograghy Apparatus
   - Lack of Fluorescence detector for aftatoxin analysis in animal tissue and also for vitamin and drug analysis in serum and animal tissue
4. Amino acid analyzer
   - Lack of accessory part for phyoiological fluid
5. Atomic Absrption Spectrophotometer
   - Lack of cathode lamp such as Hg, Mn, Co etc. and some part of apparatus
   - etc.

Number of Analyzed Specimens in Biochemical Section(1988.10-1990.9)

| Year | 1989 | 1989 | 1989 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | May | Apr. | Jun. | Jul. | Aug. | Sep. | |
| Minerals | 318 | 339 | 182 | 364 | 2 | 178 | 150 | 617 | 828 | 818 | 62 | 638 | 4,496 |
| Vitamins | 16 | | | | | | | | | | | 10 | 26 |
| Substrates | | 106 | 142 | 180 | 1 | 391 | 307 | 814 | 240 | 734 | 130 | 649 | 3,694 |
| Mycotoxins | 37 | 4 | 1 | 7 | 8 | 6 | 4 | 5 | 35 | 9 | 37 | 10 | 163 |
| Enzymes | | 22 | 71 | 311 | 2 | 245 | 489 | 472 | 131 | 1101 | 99 | 942 | 3,885 |
| Metalic Poisons | 9 | 18 | | 3 | | 9 | | 3 | 4 | 12 | 12 | 18 | 88 |
| Insecticides | 9 | 6 | 6 | 7 | 30 | 9 | 21 | 3 | 24 | 1 | 41 | 46 | 203 |
| Chemical Nutritive Value | | 18 | 13 | 14 | 4 | 6 | | 6 | 4 | 5 | | 6 | 76 |
| Water Analysis | | 2 | | | | | | | | | | | 2 |
| Herbicides | | | | | | | | | | | | | 0 |
| Drag Analysis | | | | | | | | | | | | | 0 |
| Antibiotic Residue | | | | | | | | | | | | | 0 |
| Toxic Substances | | | | | | | | 1 | | 4 | | | 5 |
| Haemograms | | 47 | | | | 108 | 64 | | | | 25 | | 244 |
| Others(Urea,Ketone,so on) | 17 | 2 | | | | | | | 63 | | 3 | 11 | 96 |
| Total | 406 | 564 | 415 | 886 | 47 | 952 | 1035 | 1921 | 1329 | 2684 | 409 | 2330 | 12,978 |

Sample numbers in Biochemical Section(1989.10 - 1990.9)

| Year | 1989 | 1989 | 1989 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | 1990 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sep. | |
| No. of Cases | 21 | 13 | 5 | 13 | 7 | 8 | 6 | 7 | 15 | 8 | 18 | 11 | 132 |
| No. of Animals | 81 | 98 | 72 | 136 | 3 | 140 | 201 | 361 | 150 | 369 | 49 | 349 | 2,009 |
| No. of Specimens | 406 | 564 | 415 | 886 | 47 | 952 | 1035 | 1921 | 1329 | 2696 | 409 | 2330 | 12,990 |

Animals: Cattle, Buffalo, Swine, Poultry, Horse, Goat/Sheep,
Canine/Feline, Water, Laboratory Animals, Others

# 7TH CONGRESS OF FEDERATION OF ASIAN VETERINARY ASSOCIATIONS

## 4-8 NOVEMBER, 1990 PATTAYA THAILAND

Return this form C with form B to the 7TH FAVA SCIENTIFIC PROGRAMME not later than ~~February 28,~~ 1990 March 30

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a. Please type or write in block (capital) letters.
b. Please check (☑) where ☐ is indicated.

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1. Title of Paper : SERUM COPPER CONCENTRATIONS OF CATTLE IN THAILAND

2. Name (s) of Author (s) : N.PHOENGPONG, R.INTRARAKSA, P.KLAININ and M.HAYASHI
   (Underline the person who will present paper)

3. Contact Person
   Name : (☐ Prof., ☐ Dr., ☐ Mr., ☑ Ms.,) N.PHOENGPONG
   Mailing Address Biochemistry and Toxicology Section, National Animal Health and Production Institute, Bangkhen, Bangkok 10900, Thailand

4. To be presented by ☐ Poster ☑ Oral

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| MS Received | # | Session/ Chairperson | Date | Time | Prog | Proc | |
| | | | | | | | |

4-8 NOVEMBER, 1990 PATAYA THAILAND
Deadline for receipt of Abstracts : ~~February 28~~ March 30, 1990

ABSTRACT

# SERUM COPPER CONCENTRATIONS OF CATTLE IN THAILAND

N.PHOENGPONG, R.INTRARAKSA, P.KLAININ and M.HAYASHI

Biochemistry and Toxicology Section, National Animal Health and Production Institute, Bangkhen, Bangkok 10900, Thailand

A total of 929 serum samples were randomly collected among domestic cattle from 8 provinces in northern, northeastern, central and southern parts of Thailand. Analyzing of Copper concentration in sera of these cattle was carried out by Atomic Absorption Spectrophotometry which showed the value at the average of 57.6 ± 16.6 ug/dl(the range of concentration are 0 - 132 ug/dl). Some provinces e.g.: Pathumthani showed very low value on an average of 31.5 ± 18.7 ug/dl(4 ~ 78 ug/dl) and the other provinces showed also lower average values of 47.7 ± 17.5(Supanburi) to 71.9 ± 18.3(Songkhla) ug/dl compared with a normal range of 80 ~ 120 ug/dl in mammals(Underwood, 1977). There is no significant difference between male and female cattle. But, there are significant differences between serum and plasma, and the age of < 1 year old and > 1 year old. Lastly, there is a significant difference between mother cattles and their calves in a group of these cattle

Keywords: Copper, Cattle, Serum, Thailand

Name (s) and Address (es) of Author (s) :

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# 7TH CONGRESS OF FEDERATION OF ASIAN VETERINARY ASSOCIATION

4-8 NOVEMBER, 1990 PATAYA THAILAND

Deadline for receipt of Abstracts: ~~February 28~~ March 30, 1990

ABSTRACT

SERUM COPPER CONCENTRATIONS OF CATTLE IN THAILAND

| Province | No. of Sample | Age | Mean±S.D. (ug/dl) | Range (ug/dl) | Collecting Date |
|---|---|---|---|---|---|
| Khon Kaen | 43 | - | 51.3±11.2 | 24 - 72 | 1989.12 |
| Bureeram | 46 | 1y - 13y | 58.7±13.6 | 24 - 90 | 1989.4 - 6 |
| Surin | 57 | 2y - 11y | 60.4±20.5 | 4 - 91 | 1989.5 |
| Petchabun | 107 | 2wks - 10y | 49.1±16.3 | 7 - 86 | 1990.3 |
| Supanburi | 76 | 1.5m - 9y | 47.7±17.5 | 15 - 87 | 1989.10-11 |
| Saraburi | 445 | 0m - 8y | 63.0±16.0 | 0 - 126 | 1988.2-1989.8 |
| Pathumthani | 71 | 2m - 10y | 31.5±18.7 | 4 - 78 | 1990.1-3 |
| Songkhla | 84 | | 71.9±18.3 | 32 - 132 | 1990.2 |
| Total | 929 | 0m - 13y | 57.6±16.6 | 0 - 132 | 1988.2-1990.3 |

(All illustration on this page)

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# การวิเคราะห์หาปริมาณยาฆ่าแมลงที่สะสมในตับของสุกร วัว และกระบือ

# A DETERMINATION OF INSECTICIDE RESIDUE IN LIVER OF SWINE CATTLE AND BUFFALO

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สุพรรณา พันธุ์มะม่วง
*Supunna Punnamuang*

กลุ่มงานพิษวิทยาและชีวเคมี สถาบันสุขภาพสัตว์และผลิตสัตว์แห่งชาติ
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ABSTRACT

The result of analysis of Chlorinated Hydrocarbon Insecticide residue in liver of 80 Swine, 67 Cattle and 48 Buffaloes from Bangkok municipal slaughter house, it was found that there were Heptachlor, Heptachlor epoxide, Dieldrin, Aldrin and Total DDT. Most of these toxic substances in the liver of those animals were found at the lower level than the maximum residue limit which set by FAO/WHO., However the level of Heptachlor was found exceed 0.2 ppm. in liver of 11 Swine, 6 Cattle, the level of Dieldrin exceed 0.2 ppm. in liver of 1 Swine, 1 Buffalo and the level of Aldrin exceed 0.2 ppm. in liver of 1 Swine and 3 Buffaloes.

# Determination of Aflatoxin Residues in Chicken Tissues

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A hundred and fifty samples of chicken livers, kidneys, pectoral muscles and femoral muscles were collected from 7 slaughter houses, 100 grams each. The samples were extracted and determined using Stubble field and Shotwell Method and quantitively analysed by HPLC (High Performance Liquid Chromatography). 27 from 47 livers, 16 from 43 kidneys, and 18 from 60 muscles were found to contain aflatoxin. $G_1$ type was found the most then $B_1$ type, respectively.

# Determination of Aflatoxin Residues of Chicken Tissues in Thailand

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(Received 28 February 1990/Accepted 12 May 1990)

## Summary

Three hundred samples of chicken livers, kidneys, breast and leg muscles in Thailand were selected by means of multistage random sampling, 100 grams each to detect aflatoxins. The samples were extracted and determined using STUBBLEFIELD and SHOTWELL Method and quantitatively analysed by HPLC (High Performance Liquid Chromatography). 34 from 77 livers, from 95 kidneys and 34 from 128 muscles samples were found to contain aflatoxins. Contamination of aflatoxins were highest in liver (44.16%) and lowest in muscles (26.56%). The rainy season is the highest season for aflatoxin contamination (49%). The level of aflatoxin $B_1$ in tissues (0.0-0.068 ppb) were lower than 5ppb which is allowed to be present in human food.

*Jpn. Bull. Anim. Hyg., 31 : 9-12, 1990*

# การวิเคราะห์หาสารอะฟลาท็อกซินปนเปื้อนในอาหารเป็ดโดยใช้เซปแพ็คสิลิก้าคาทริค

# DETERMINATION OF AFLATOXIN CONTAMINATION IN DUCK FEED BY USING SEP-PAK SILICA CARTRIDGE

อนงค์ นิตยวิหค ดารณี สมบูรณ์จิตต์

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Abstract

Thirty of duck feed samples were comparatively extracted by using AOAC method with ordinary column clean up and Roberts, B.A. et.al method with sep-pak silica cartridge. The samples were comparatively determined by HPLC and TLC. The different of Roberts, B.A. et.al. method was not statistically significant. compared to AOAC method. HPLC was quantitatively determined more sensitive than TLC.

บทคัดย่อ

การวิเคราะห์หาสารอะฟลาท็อกซินปนเปื้อนในอาหารเป็ด จำนวน 30 ตัวอย่าง โดยเปรียบเทียบวิธีสกัดของ AOAC ซึ่งใช้คอลัมน์ธรรมดา กับวิธีของ Roberts และคณะ ซึ่งใช้เซปแพ็คสิลิก้าคาทริค และเปรียบเทียบปริมาณ ที่วัดได้จาก HPLC และ TLC ผลปรากฏว่า วิธีสกัดของ Roberts และคณะให้ผลไม่แตกต่างกันอย่างมีนัยสำคัญทางสถิติกับวิธีของ AOAC นอกจากนี้การวัดปริมาณโดยใช้ HPLC สามารถได้ค่าที่ละเอียดดีกว่า TLC

*Thai J. Toxicology 3, 40-45 (1987)*

# TRANSMISSION OF AFLATOXIN $B_1$ INTO EGGS OF LAYING HENS FED AFLATOXIN $B_1$ CONTAMINATED DIETS WITH POLYVINYL PYROLIDONE AND/OR DIATOMACEOUS EARTH

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## ABSTRACT

Aflatoxin residues in eggs of layers fed aflatoxin $B_1$ (1, 2 and 3 ppm) contaminated diets with polyvinyl pyrolidone (200 ppm) and/or diatomaceous earth (800 ppm) for 12 weeks were examined. Diets containing aflatoxin $B_1$ (at all levels) caused a decrease in egg production, whereas diets containing aflatoxin $B_1$, polyvinyl pyrolidone and diatomaceous earth seemed to improve egg production more closely to normal capability. No significant change in egg weights. Aflatoxin residues in eggs of layers fed only aflatoxin $B_1$ contaminated diets at levels of 1, 2 and 3 ppm were 0.11, 0.22 and 0.24 ppb respectively. However, addition of polyvinyl pyrolidone (200 ppm) and diatomaceous earth (800 ppm) together to diets containing aflatoxin $B_1$ at a level less than 2 ppm effectively reduced aflatoxin residues in eggs to non-detectable amount.

Key words : Aflatoxin; residue; layers; polyvinyl pyrolidone; diatomaceous earth; eggs.

(Received October 5, 1986; accepted January 3, 1987).

*i J. Toxicology 3, 31-39 (1987)*

# AFLATOXIN $B_1$ RESIDUES IN TISSUES OF DUCKLINGS GIVEN FEED CONTAINING AFLATOXIN AND AMMONIUM CARBONATE OR PROPIONIC ACID

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## ABSTRACT

Aflatoxin residues in muscles and other tissues of ducklings fed aflatoxin $B_1$ contaminated feed containing ammonium carbonate (0.4%) or propionic acid (0.02%) were examined. Aflatoxin $B_1$ (20 ppb) induced a slight higher mortality rate by 7.5% after 8 weeks of continuous feeding. No histopathologic change in liver was observed, although SGPT activity was rarely increased in two groups of ducks fed aflatoxin $B_1$ and aflatoxin $B_1$-propionic acid feeds. Aflatoxin residues were highest in muscles (0.15 ppb) of ducks fed aflatoxin $B_1$ feed and they were lower in muscles (0.07 and 0.05 ppb) of ducks fed aflatoxin $B_1$-ammonium carbonate and aflatoxin $B_1$-propionic acid feeds. Therefore, the concentrations of ammonium carbonate and propionic acid used for purpose of aflatoxin $B_1$ detoxification in this study seem to be effective.

Key words : Aflatoxin; residue; detoxification; ammonium carbonate; propionic acid; duckling.

(Received October 5, 1986; accepted January 3, 1987).

# AFLATOXIN AND TOXIC RESIDUE: ITS INFLUENCE WITH REGARD TO JEOPARDIZE THE CHICKEN AND TISSUES.

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Aflatoxin residues in muscles and other tissues of chickens fed aflatoxin $B_1$ (200 ppb) contaminated feed containing ammonium carbonate (0.4%) or propionic acid (0.02%) or polyplasdon XL-DE (1000 ppm) or antitox plus (2000 ppm) for 8 weeks were examined. Histopathological changes in liver showed very severe of bile duct proliferation in chicken fed aflatoxin $B_1$ feed and aflatoxin $B_1$-ammonium carbonate feed. However, the chicken fed aflatoxin $B_1$-polyplasdonXL-DE and aflatoxin $B_1$-antitox plus feed showed few of bile duct proliferation. SGOT activity was increased in chicken fed aflatoxin $B_1$ and the pattern of SGOT activity in chicken fed aflatoxin $B_1$-detoxifying agents was similar and slightly decreased to that of chicken fed aflatoxin $B_1$ alone. However, SGPT activity was rarely increased in three groups of chickens fed aflatoxin $B_1$, aflatoxin $B_1$-propionic acid and aflatoxin $B_1$-ammonium carbonate. Aflatoxin residues were highest in muscles (0.117 ppb) of chickens fed aflatoxin $B_1$ feed and they were lower in muscles (0.007, 0.004, 0.001 and 0.001 ppb) of chickens fed aflatoxin $B_1$-polyplasdonXL-DE, aflatoxin $B_1$-antitox plus, aflatoxin $B_1$-ammonium carbonate and aflatoxin $B_1$-propionic acid respectively. Therefore, addition of propionic acid (0.02%) or polyplasdon XL-DE (1000 ppm) or antitox plus (2000 ppm) to diets containing aflatoxin $B_1$ (200 ppb) for detoxification seem to be effective.

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Document prepared to submit to joint meeting on. Dec 3, 1990

NAHPI Project, Epidemiology section.

A. Service Activity

1. Diagnostic Services
2. Field survey
3. Investigation for the incidence of animal diseases in Central region of Thailand.
4. Inspection of exotic disease in imported animal
5. Epidemiological surveillance.

B. Research activity

1. Major subjects

1.1 Nation-wide survey of Paratuberculosis in cattle.

1.2 Serological survey of Trypanosomiasis in pig and cattle.

1.3 Inspection of exotic diseases in imported animals.

1.4 Survey of infections diseases in the central region of Thailand.

1.5 Animal key farm.

1.6 Serum bank.

1.7 Data collection, Compilation and analysis.

2. Research Projects.

| Projects. | Acheivement | Responsibility |
|---|---|---|
| 2.1 Epidemiological survey and analysis of paratuberculosis incidence in cattle in central region. | 20% | Dr. Yodyot. |
| .2 Study on epidemiology of anthrax in Thailand | 20% | Dr. Jatuporn. |
| .3 Skin and serological Test for tuberculosis in dairy cattle. | - | Dr. Yodyot. |
| 4 Investigation for antibody of Bluetongue in cattle and sheep by agar gel. | - | Dr. Jatuporn. |
| Trypanosomiasis in pigs. | 20% | Dr. Chit. |
| Evaluation of Brucellosis status breeding pigs. | - | Dr. Jatuporn. |
| Evaluation of Brucellosis status in dairy cattle | - | Dr. Jatuporn. |
| Sero-epidemiology study on Trypanosome infestion in pigs using indirect haemaglutination test (IHA Test) | 50% | Dr. Chit. |

Diagnostic Services Improvement

Case submission to NAHPI camès from farmers, field livestock officers and private enterprise sector. Each year submitter from private enterprise sector still sent more specimens to NAHPI than the others.

It in important in providing some documents about collecting and preserving specimens for examination and distribute to farmers and private agencies. In the part of goverment official concern, There will be training programs for collection of specimens, basic diagnosis and data information.

Reply result to submitter

1. Should be quick and can be helpful for farmers to encounter the problems while the Final diagnosis usually takes longtime

2. Summarize and canclusion of the disease for replying and giving advice to farmers need experience officers.

3. Reply result by using computer and record the date from every submission and stay ready for giving information to the sender whenever heask.

Diagnostic services must immproved

according to the meeting of the Joint. committee of NAHPI Project, JICA on Jan. 26, 1990

1. Investigation of exotic disease from immported animal and Animal deseases still lack of antigen such as Bluetongue etc.

2. The data collection, compilation and analysis, although Epidemiology section received more computer but not enough, it should be five computer sets for entering date, analysing, giving information to submitter or goverment officer

Request

1. Staff Training in epidemiology
2. Short terms experts
3. Training program budget in basic diagnosis and epidemiology for provincial officer
4. Some equipment necessary for the Epideminology work that will be considered by the expert.

## Diagnosis service in 1988, 1989 - 1990

| Year | Number of specimens submitted | Animal diagnosed | | | | | Serum | Live | Carcass | Organ | Blood | Fecies |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cattle | Buffalo | Swine | Pqultyy | Other | Sample | animal | | | | |
| 1988 | 17,192 sample | 6,049 | 188 | 4,278 | 2,209 | 352 | 8,943 | 508 | 398 | 430 | 1,484 | 2,350 |
| | | | | | | | AV.754 h/m | AV.42 h/m | AV.33 h/m | AV.36 h/m | AV.124 h/m | AV.196 |
| | AV.1,433 sample/ month | Total 15,441 heads AV.1287 head/ month | | | | | | | | | | |
| 1989 | 20,714 samples | 9,399 | 24 | 3,877 | 3,158 | 763 | 11,645 | 582 | 522 | 397 | 3,217 | 2,886 |
| | AV.1,726 sample/ month | Total 17,221 heads AV.1438 head/ month | | | | | AV.970 h/m | AV.48 h/m | AV.43 h/m | AV.33 h/m | AV.268 h/m | AV.241 |
| 1990 | 16,584 sample | 6,294 | 36 | 3,824 | 2,570 | 811 | 9,806 | 720 | 456 | 158 | 1,088 | 1568 |
| | | Total 13,535 | | | | | | | | | | |

DATA OF case submitted for Diagnostic services

Period: October 1989- September 1990

| | Cattle | Buffalo | pig | goat | sheep | duck | chicken | bird | other | total |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Number of owner | 324 | 8 | 289 | 6 | 7 | 26 | 204 | 8 | 147 | 1019 |
| 2. Number of animal | 6294 | 36 | 3824 | 16 | 34 | 107 | 2463 | 25 | 736 | 13535 |
| 3. Number of sample | 8575 | 37 | 4172 | 20 | 39 | 142 | 2779 | 26 | 793 | 16584 |
| 3.1 Live animal | 49 | 0 | 93 | 2 | 3 | 48 | 428 | 6 | 91 | 720 |
| 3.2 Carcass | 1 | 0 | 89 | 2 | 1 | 34 | 296 | 0 | 33 | 456 |
| 3.3 Organ | 29 | 14 | 37 | 2 | 0 | 3 | 42 | 4 | 27 | 158 |
| 3.4 Serum sample | 5734 | 23 | 2738 | 0 | 0 | 0 | 1016 | 0 | 295 | 9806 |
| 3.5 Blood | 613 | 0 | 74 | 0 | 1 | 20 | 335 | 0 | 45 | 1088 |
| 3.6 Blood film slide | 980 | 0 | 3 | 2 | 13 | 0 | 6 | 0 | 8 | 1012 |
| 3.7 feces | 590 | 0 | 687 | 12 | 18 | 0 | 166 | 13 | 81 | 1568 |
| 3.8 Milk | 72 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| 3.9 Other | 507 | 0 | 447 | 0 | 2 | 38 | 490 | 3 | 213 | 1700 |

Cattle diseases Under Laboratory surveillance : NAHPI

Period : october 1989 - September 1990

| Diseases surveillance | No. Positive (Head) | diagnosis (time) | Total | Sick | died |
|---|---|---|---|---|---|
| ANAPLASMOSIS | 1 | 1 | 350 | 1 | 0 |
| ANTHRAX | 0 | 0 | 0 | 0 | 0 |
| ASCARIDIASIS | 132 | 27 | 3209 | 24 | 2 |
| BABESIOSIS | 341 | 26 | 1442 | 19 | 10 |
| BLACK LEG | 0 | 0 | 0 | 0 | 0 |
| BLUE TONGUE | 0 | 0 | 0 | 0 | 0 |
| BRUCELLOSIS | 297 | 63 | 30826 | 166 | 18 |
| BVD-MD | 0 | 0 | 0 | 0 | 0 |
| COCCIDIOSIS | 52 | 11 | 3350 | 0 | 0 |
| FASCIOLIASIS | 17 | 9 | 401 | 3 | 2 |
| FMD | 0 | 0 | 0 | 0 | 0 |
| HAEMORRHAGIC SEPTICEMIA | 0 | 0 | 0 | 0 | 0 |
| IBR | 2 | 1 | 3 | 0 | 0 |
| LEUKOSIS | 0 | 0 | 0 | 0 | 0 |
| MASTITIS | 9 | 2 | 28 | 5 | 0 |
| PARATUBERCULOSIS | 104 | 28 | 4640 | 46 | 1 |
| RABIES | 0 | 0 | 0 | 0 | 0 |
| SCHISTOSOMIASIS | 5 | 3 | 67 | 8 | 2 |
| THEILERIASIS | 12 | 3 | 155 | 7 | 1 |
| TRYPANOSOMIASIS | 46 | 10 | 882 | 8 | 6 |
| TUBERCULOSIS | 1 | 1 | 1758 | 0 | 0 |

Swine diseases under Laboratory serveillance : NAHPI

Period : October 1989 - September 1990

| Diseases Serveillance | Positive (head) | diagnosis (time) | total | Sick | died |
|---|---|---|---|---|---|
| AUJESZKY'S DISEASE | 38 | 4 | 89833 | 2125 | 883 |
| AFLATOXICOSIS | 0 | 0 | 0 | 0 | 0 |
| ATROPHIC RHINITIS | 0 | 0 | 0 | 0 | 0 |
| BRUCELLOSIS | 5 | 1 | 83128 | 201 | 87 |
| COCCIDIOSIS | 53 | 9 | 28470 | 111 | 64 |
| COLIBACILLOSIS | 252 | 60 | 70274 | 7386 | 2390 |
| ERYSIPELAS | 0 | 0 | 0 | 0 | 0 |
| FMD | 13 | 5 | 6681 | 189 | 111 |
| HEMOPHILOSIS | 4 | 2 | 3453 | 648 | 63 |
| MMA-SYNDROME | 0 | 0 | 0 | 0 | 0 |
| PORCINE PARVO VIRUS | 0 | 0 | 0 | 0 | 0 |
| PASTEURELLOSIS | 23 | 12 | 8041 | 1993 | 1158 |
| RABIES | 0 | 0 | 0 | 0 | 0 |
| SALMONELLOSIS | 44 | 19 | 51940 | 2252 | 676 |
| SWINE DYSENTERY | 12 | 3 | 29862 | 704 | 0 |
| SWINE FEVER | 50 | 20 | 90467 | 9551 | 2967 |
| SWINE POX | 1 | 1 | 0 | 150 | 150 |
| TGE | 2 | 1 | 180 | 60 | 40 |
| TRICHINOSIS | 0 | 0 | 0 | 0 | 0 |
| TOXOPLASMOSIS | 34 | 3 | 1005 | 14 | 10 |
| TRYPANOSOMIASIS | 0 | 0 | 0 | 0 | 0 |

Poultry diseases. Under Laboratory Surveillance : NAHPI

Period : October 1989 - September 1990

| Diseases surveillance | Positive (head) | diagnosis (time) | total | Sick | died |
|---|---|---|---|---|---|
| AFLATOXICOSIS | 29 | 7 | 253861 | 48097 | 4933 |
| ASCARIDIASIS | 13 | 10 | 91330 | 7202 | 924 |
| ASPERGILLOSIS | 20 | 6 | 12550 | 8462 | 1562 |
| COCCIDIOSIS | 43 | 20 | 132150 | 12137 | 1645 |
| COLIBACILLOSIS | 352 | 26 | 925308 | 201969 | 35595 |
| CRD | 0 | 0 | 0 | 0 | 0 |
| DUCK PLAGUE | 8 | 3 | 26390 | 1475 | 491 |
| EDS | 0 | 0 | 0 | 0 | 0 |
| FOWL CHOLERA | 23 | 5 | 20200 | 7180 | 1935 |
| IBV | 13 | 2 | 133120 | 28662 | 5484 |
| IBD | 65 | 4 | 124880 | 38327 | 9500 |
| INFECTIOUS CORYZA | 13 | 2 | 9680 | 2825 | 132 |
| ILT | 12 | 1 | 22070 | 10730 | 1492 |
| LEUCOCYTOZOONOSIS | 21 | 5 | 1800 | 2 | 2 |
| LYMPHOID LEUCOSIS | 5 | 1 | 10000 | 4100 | 0 |
| MAREK'S DISEASE | 29 | 9 | 53702 | 4601 | 1528 |
| NEWCASTLE DISEASE | 221 | 19 | 496156 | 57905 | 24362 |
| PULLORUM | 0 | 0 | 0 | 0 | 0 |
| SALMONELLOSIS | 159 | 17 | 399513 | 50389 | 8157 |
| TAPE WORM INFESTATION | 6 | 6 | 210 | 33 | 26 |
| NEW DUCK SYNDROME | 7 | 2 | 7000 | 5200 | 1351 |

Some important Cattle diseases diagnosed by NAHPI

Period : october 1989 - September 1990

| Cattle diseases | No.Positive | No. of Sample | frequency of Positive |
|---|---|---|---|
| ACINETOBACTER INFECTION | 14 | 19 | 2 |
| AFLATOXIN POISONING | 1 | 7 | 1 |
| ANAPLASMOSIS | 1 | 79 | 1 |
| ANTHRAX | 0 | 0 | 0 |
| ASPERGILLOSIS | 0 | 0 | 0 |
| BABESIOSIS | 341 | 522 | 31 |
| BRUCELLOSIS | 297 | 3806 | 63 |
| CARBAMATE POISONING | 4 | 5 | 2 |
| CHLORINATED HYDROCARBON POISONING | 3 | 4 | 1 |
| COCCIDIOSIS | 52 | 383 | 7 |
| E. COLI INFECTION | 33 | 33 | 8 |
| CORYNEBACTERIAL INFECTION | 5 | 5 | 1 |
| ENTEROBACTER INFECTION | 2 | 23 | 2 |
| LIVER FLUKE INFESTATION | 17 | 191 | 9 |
| MASTITIS | 9 | 9 | 2 |
| MICROCOCCAL INFECTION | 29 | 46 | 4 |
| MONIEZIA INFESTATION | 10 | 245 | 3 |
| ORGANOPHOSPHATE POISONING | 5 | 11 | 3 |

| Cattle diseases | No. Positive | No. Sample | frequency of Positive |
|---|---|---|---|
| PARATUBERCULOSIS | 104 | 1529 | 28 |
| PASTEURELLOSIS | 0 | 0 | 0 |
| PSEUDOMONAS INFECTION | 7 | 7 | 3 |
| ROUND WORM INFESTATION | 132 | 513 | 27 |
| RUMEN FLUKE INFESTATION | 39 | 276 | 13 |
| SCHISTOSOMIASIS | 5 | 17 | 3 |
| STAPHYLOCOCCAL INFECTION | 10 | 13 | 6 |
| STREPTOCOCCAL INFECTION | 18 | 37 | 8 |
| STRONGYLOIDES | 13 | 151 | 5 |
| TUBERCULOSIS | 1 | 585 | 1 |
| THIELERIA INFESTATION | 12 | 153 | 3 |
| TRYPANOSOMIASIS | 46 | 217 | 7 |

Some important Swine diseases diagnosed by NAHPI

Period : October 1989 - September 1990

| Swine diseases | No. Positive | No. Sample | frequency of Positive |
|---|---|---|---|
| ACINETOBACTER INFECTION | 0 | 0 | 0 |
| AFLATOXIN POISONING | 0 | 5 | 0 |
| ASPERGILLOSIS | 0 | 0 | 0 |
| ATROPHIC RHINITIIS | 0 | 0 | 0 |
| BACILLUS INFECTION | 0 | 0 | 0 |
| BRUCELLOSIS | 5 | 1210 | 1 |
| CARBAMATE POISONING | 0 | 0 | 0 |
| CHLORINATED HYDROCARBON POISONING | 0 | 0 | 0 |
| COCCIDIOSIS | 53 | 278 | 9 |
| COLIBACILLOSIS | 252 | 288 | 60 |
| CORYNEBACTERIAL INFECTION | 1 | 1 | 1 |
| ENTEROBACTED INFECTION | 5 | 12 | 4 |
| ENTERITIS | 5 | 5 | 1 |
| HEMOPHILLUS | 4 | 16 | 2 |
| MICROCOCCAL INFECTION | 3 | 11 | 2 |
| PNEUMONIA | 8 | 8 | 4 |
| ORGANOPHOSPHATE POISONING | 0 | 0 | 0 |
| PROTEUS INFECTION | 7 | 19 | 5 |

| Swine diseases | No. Positive | No. Sample | frequency of Positive |
|---|---|---|---|
| PASTEURELLOSIS | 23 | 40 | 12 |
| PSEUDOMONAS | 4 | 9 | 3 |
| SWINE FEVER | 50 | 208 | 20 |
| SALMONELLOSIS | 44 | 245 | 19 |
| STAPHYOCOCCUS | 12 | 13 | 7 |
| STREPTOCOCCUS | 43 | 71 | 20 |
| STRONGYLOIDES | 0 | 0 | 0 |
| TGE | 2 | 21 | 1 |
| TOXOPLASMOSIS | 34 | 357 | 3 |
| TRYPANOSOMIASIS | 0 | 82 | 0 |

## EPIDEMIOLOGY SECTION

## NATIONAL ANIMAL HEALTH AND PRODUCTION INSTITUTE

### Nationwide survey of paratuberculosis in cattle

A certain amount of dairy and beef cattle from various parts of Thailand were found suffering from the disease in the past 3 years of the disease survey project. The diagnosis of the disease based on clinical symptoms, skin test (Johnin test), CF test, P.M. examination and bacteriological identification are carried out in order to assess the disease status. The project was planned to randomize and test 16,000 cattle inorder to cover all parts of Thailand. 3,000 serum samples were already tested and collected specimens for the project. The result ot the testing indicate the situation of the disease to be a serious problem that should be undergone an immediate control and surveillance activities. The priority of the study on epidemiology and control measures of the disease needed to be emphasized and be strenghtened by both Thai and Japanese governments in the cooperative research program in the area found highly infected from the survey. The results of the study will be used as a model for control program that will reduce the economic loss due to the disease.

3 SF infection tend to persist for many months in the herd holding many sows where piglets are farrowed continuously. The virus may be maintained in the population of suckling and weanling piglets before or shortly after vaccination.

4 SF spreads among even adult pigs more than some weeks after vaccination having antibody of low titer. Clinical signs in this case are not typical. Laboratory test including the estimation of neutrlizing antibody titer is essential to identify the SF infection.

5 Farmers and even veterinarians lack the knowledge to prevent the herd from introduction of the virus from without and to control the disease after outbreak. They depend on only vaccination.

*Survey of health conditions of imported cattle.*

Recently many dairy and beef cattle of purebred are being imported mostly from Australia and New Zealand. The cattle are rather vulnerable to tropical environment and to a variety of infectious diseases which are endemic in Thiland and to which indigenous cattle are relatively resistant.

For the past 2 years, some 10,000 cattle have been imported and many of them suffered from a variety of illness including generalized symptomes, abortion, reduced milking, nervous and fatal cases. Some cases of illness were proved to be caused by Trypanozoma and Theilleria, but with the the most cases, the cause has not been determined.

The disease of imported cattle may be mostly complex syndrome caused by multiple etiology including pathogens, management and environmental factors.

To establish the health control scheme of imported cattle, the survey of health conditions including diseases, management and environment may be necessary.

Epidemiology Sction and Immunoserology section are perfoming the immunological test of tuberculosis, paratuberculosi and Brucellosis of imported cattle.

Parasitology section investigated the protozoal infection in herds of imported cattle.

Virology section proved the infectin in Thailand of impoprted cattle with some arthropod-born viruses which are prevalernt among indigenious cattle.

In the first stage of coperative research program,above on-going activity will be organized into the program. Collection of informations from fields should be strengthened.

# COOPERATIVE RESEARCH PROGRAM
(Draft by T.Kumagai, Dec.13,1990)

The important and difficult diseases should be approachoed in diverse direction and needs the close cooperation of the persons or sections of different fields concerned.

## Subject

The particular importance of FMD, swine fever, paratuberculosis, cupper deficiency of cattle and diseases in imported pure bled cattle has been indicated by the Director General and other leading staff of DLD, and the organization of the cooperative research program on these diseases has been proposed at the NAHPI Project Joint Meeting, July, 1989. Any other important disease is desirable to come under the cooperative research program.

## Organization

The cooperativae research team is organized of the personps or group presently concerning the particular disease in the NAHPI. With the progress of the project, will be included the other persons in the NAHPI and the person of other institution such as DLC,Dis.Cont.Div.,Vet.Serv.Div.,Regional and District Livestock office and Universities.

## Swine fever

Swine fever study team was formed of 8 staff from Virology, Pahology, Epidemiology section and 3 JICA experts, Sep., 1989. The team has so far investigated SF in 3 herds of medium or large size where vaccination had been practiced in order to find the characteristics of disease condition and cause of introduction and spread of the disease in the herds. Such case study will be countinued.

In the second phase of the program, epidemiological investigation is expected to be conducted in the area in Nakhornpathom where SF is highly endemic. The investigation aims the establishment of areal SF control program. The cooperation with Dis.Cont. Div. and Vet.Serv.Div., Regional and District Livestock Office, is necessary.

Virological, immunological and pathological examination of field samples and experimental works in laboratory have provided valuable informations to understand and explain the disease conditions in the field.

The results of field and laboratory investigation so far obtained indicate:
1 SF in Thailand is mosstly typical and can be identified by ordinal laboratory methods.

2 Vaccines presently used are effective, but vaccination program should be revised.

Analysis and Approaches to Animal Health Problems

Epidemiology Section

Sponsored by JICA through NAHPI Project

Period : October 1989 - September 1992

Project Planning Matrix (PPM)

| | Object/ Activities | Objectively Verifiable indicator | Sources/Means of Verification | Important Assumption |
|---|---|---|---|---|
| GOAL | 1.Increase animal productivity and improve the exploit activities in animal sector in Thailand.<br>2.Decrease economics losses from certain important animal diseases. | 1.Increase off-take rate 5-10% in 1992 (end of project).<br>2.Decrease death rate and attack rate from certain diseases 10-15% in 1922.<br>3.Decrease economics losses due to animal health problems 20% in 1922. | 1.Monitoring, recording,reporting and analysis of the data collected through out the project. | 1.Full acceptance and support to the project by both Thai government and the Japanese government relating to achievement of the project purpose funds allocated. |
| PROJECT PROPOSE | 1.Delivery of animal health care, prevention and animal disease surveillance are improved.<br>2.Knowledges and results from the project can be of valuable to the farmers,officers and researchers concerned in animal extension and promotion. | 1.10 % of small-scale farm units receives proper services from DLD according to the analysis and alternative strategic approaches suggested from the studies in this project.<br>2.Awareness of the animal health problems of farmer and field officer render the proper prevention of certain disease. | 1.Followup implementation of DLD field personnels,other agencies and farmer in the control program suggested by the Epidemiology study. | 1.Full cooperation of DLD authorities, other agencies concerned and village level farmer<br>2.Priority of animal health problems are defined and made clear to all concerned. |

| / Activities | Objectively Verifiable Indicators | Sources/Means of Verification | Important Assumption |
|---|---|---|---|
| OUTPUTS 1. Baseline informations of certain important animal diseases and priority of the problems with the alternative measures for approach | 1. Epidemiological data analysis from the data collection from laboratory diagnosis, field investigation, existing records and reports. | 1. Reports, records from DLD Livestock officers / centers :<br>- PLO,<br>- Diagnostic center, NAHPI<br>- Research paper reports | 1. Recording and reporting system are encouraged by authorities. |
| 2. Suitable animal disease investigation methods are improved and implemented in the field when a certain disease occurred. | 2. Results from the implementation of activities of the project. | 2. Project activities, | 2. New techniques and support of diagnostic items are met by both Thai government and Japanese government. |
| 3. Recording, reporting and analysis of field data are improved. | 3. Monitoring reports from field personnels returned and are analysed. | 3. Surveillance reports | |
| 4. Brucellosis free dairy and swine farms are established in the central part of Thailand. | 4. Regulary check up and surveillance report from field personels | 4. Visits and surveillance reports | |
| 5. Suitable control measures of Paratuberculosis, Tuberculosis, Anthrax, Babesiosis, Brucellosis, Anaplasmosis, Trypanosomiasis and Bluetongue are carried out. | 5. same as 4. | | |
| 6. Extension packages for village level small holders are developed in the field of animal production and disease prevention. | 6. Extention materials of the result of the information received from the project. | | |
| 7. Expasion of microcomputer analysis capability to cover economics as well as epidemiological studies. | 7. Appraises of the analysis using microcomputer are found worthy and reliable. | | |
| 8. Information package to farmer on disease problems, disease prevalence and disease prevention and control measures. | | | |

| Activities | Input Required for Activities | Important Assumption |
|---|---|---|
| Project1 Analysis of Animal Diseases Diagnosed by laboratories and Field Investigation. | | |
| 1.Collection and compilation of laboratory diagnostic results from NAHPI laboratories.<br>2.Collection and compilation of field investigation or survey data.<br>3.Collection and compilation of existing data from any reliable sources.<br>4.Analysis of all the collected data to envisage the animal health problems in the field.<br>5.Priority setting of the animal health problems. | 1.Three microcomputers (CPU 80286 with 40 MB Harddisk) needed for:-<br>-routine storing and retrieval of data.<br>-analysis of data from time to time with periodic reports.<br>2.Three vehicles for field transportation to collect data and study the disease outbreaks as well as to collect specimens for confirmation of diagnosis.<br>3.Three temporary-hired typists for keying data into computers.<br>4.One temporary-hired statistician.<br>5.Use all 1.-4. | Full support from JICA<br>Full understanding of the use of microcomputer with the works of Epidemiology.<br>Field works of this project are the key to solve and decide strategy to minimized animal health problem.<br>Data from the studies required in this project are understood by implementing agencies. |
| Project2 Paratuberculosis Survey Project. | | |
| 1.Setting multistage random sampling method to collect field data.<br>2.Using questionaires, observation and physical examination for specific details.<br>3.Johnin testing of selected animals<br>4.Sera collection for CF-test.<br>5.Fecal collection of suspected.<br>6.Further Biochemical and pathological studies in positive animals will be done cooperatively with Biochemistry and Pathology Section | 1.16,000 tests of Johnin needed from JICA for implementation program in all part of the country.<br>2.All those required in project1 are used in this project too.<br>3.CF-antigens are also needed for the 16,000 test. | 1.Adequate antigens are supplied by JICA.<br>2.Field data collection and survey project are main point of this project. |

| Activities | Input Required for Activities | |
|---|---|---|
| Project3 Skin and Serology test for Tuberculosis | | |
| 1.Intradermal test for positive.<br>2.Serological studies to compare with the skin test.<br>3.Epidemiological study. | 1. 20,000 tests of Tuberculin needed for the project.<br>2. Positive animals for skin test are collected sera for serology study.<br>3. All Epidemiology studies need those required in project1 | Fully supported by JICA. |
| Project4 Swine Fever Investigation Project. | | |
| 1.Epidemiological investigation of Swine Fever outbreak.<br>2.Analysis of economics loss from the disease.<br>3.Setting alternative control and prevention procedures from the Epidemiological data analysis of field outbreaks and laboratory studies. | The same as preceding projects. | |
| Project5 Study on Epidemiology of Anthrax in Thailand. | | |
| 1.Collection of soil and data of anthrax outbreak in area reported or recorded since January 1987<br>2.Surveillance for the disease<br>3.When outbreak occurs, investigation and control strategy will be done in the field based on Epidemiology<br>4.Epidemiological analysis for future control in various aspects. | Same as preceding projects | |
| Project6 Investigation and serological test for Trypanosoma evansi | | |
| 1.Prepare antigen and positive sera for T.evansi.<br>2.Serological survey with IHA and CF | 1. Laboratory equipments needed for the project are requested from JICA. | |

| Activities | Input Required for Activities | Important Assumption |
|---|---|---|
| Project7 Databank Project | | |
| 1.Computerized data storage and retreival for future or immediate use. | One minicomputer with terminals needed | |
| 2.Increase personnels and computer facilities to meet future requirements. | 4 six m/m training in computer processing and analysis. | Databank expansion program is important and necessary . |
| Project8 Serum Bank Project | | |
| 1.Storage of serum collected from any places or any project as well as all the historical information. | 1. Three minus 70°C refrigerators needed.<br>2. Adequate 1 ml vials for keeping sera needed. | |
| Project9 Brucellosis-Free Dairy and Swine Farm. | | |
| 1.Collection of baseline data of dairy and swine farm.<br>2.Classification of the farm according to size and number of animal.<br>3.Brucellosis testing all the animal in these farm.<br>4.Analysis of the data collected and result of the testing.<br>5.Surveillance system setting. | 1. All that required are included in the Databank and Analysis project. | |
| Project10 Investigation for antibody of blue tongue in cattle and sheep by agar gel immunodiffusion test | | |
| 1.Collected sera of cattle and sheep from central part of Thailand. | | |
| 2.Using agar gel immunodiffusion test to detect antibody of Blue tongue. | Blue tongue antigens required | |

## General brief

## Future work plan of Epidemiology

Epidemiology section

1.Research Project

1.1 Epidemiology survey and analysis of Paratuberculosis incidence in cattle in central region

1.2 Study on epidemiology of Anthrax in Thailand

1.3 Skin and serological test for Tuberculosis in dairy cattle

1.4 Investigation for antibody of Bluetongue in cattle and sheep by agar gel

1.5 Trypanosomiasis in pig

1.6 Evaluation of Brucellosis status in breeding pigs

1.7 Evaluation of Brucellosis status in dairy cattles

1.8 Sero-epidemiology study on Trypanosome infestation in pigs using indirect haemaglutination test (IHA test)

2. Animal key farm

3. Serum bank

Data collection,complilation and analysis

5. Provide training in basic diagnosis and Epidemiology information for provincial officers in central region

## Fellowships and Experts

Fellowships

- two fellowships of 6 man-month for training in Epidemiology
- two fellowships of 2 man-month for paraveterinarian training in basic diagnosis
- post-training fellowships

Experts

Two short term experts/year in the field of Epidemiology

## Requestion of equipment from Epidemiology

| Project | equipment | reason |
|---|---|---|
| 1.Data collection,complilation, and analysis | 1.-Computer 3 set(80386)<br>-Printer 4 set (LQ1050)<br>-Modem for Telephone-connection 1 set<br>-Local area net work-for 5 computer 1 set<br>-Removable hardisk 3 set 40 MB<br>-Facsimile 1 set | 1.for data collection , analysis and to communicate data between diagnosis centers and facsimile for transfer data between provincial officers and epidemiology |
| 2.Serum bank | 2. Freezer 1 set<br>-40 c over 25 cu ft | 2.to keep serum for research activity |
| 3.Office facility | 3.-Air condition 24000 BTU 3 set<br>-Air condition 12000 Btu 3 set<br>-Meeting table 2 set<br>-Officer desks with shelves 12 set | 3.old office is too narrow for all officers,if section has more officers the room is not enought for officers to work and Epidemiology want some room to be small laboratory for basic diagnosic |

Scope of activity of Epidemiology since December 1986 - December 1991

| Project | 1st year | 2nd year | 3rd year | 4th year | 5th year |
|---|---|---|---|---|---|
| 1.Nation-wide survey of Paratuberculosis in cattle | | xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx | | | |
| 1.1 Epidemiology survey and analysis of Paratuberculosis incidence in cattle in central region | | | ← | | |
| 2.Serological survey of Trypanosomiasis pigs and cattles | | xxxxxxxxxxxxxxxxxx | | | |
| 2.1 Trypanosomiasis in pigs | | | ← | → | |
| 2.2 Sero-epidemiology study on trypanosome infestation in pigs using indirect Haemaglutination test (IHA test) | | | ← | → | |
| 3.Inspection of exotic disease in imported animals | xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx | | | | |
| 3.1 Investigation for antibody of Blue-tongue in cattles and sheeps by agar gel | | | | ← | |
| 4.Survey of infectious disease in the central region of Thailand | xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx | | | | |

| Project | 1st year | 2nd year | 3rd year | 4th year | 5th year |
|---|---|---|---|---|---|
| 4.1 Study on epidemiology of Anthrax in Thailand | | | | | |
| 4.2 Skin and serological test for Tuberculosis in dairy cattle | | | | | |
| 4.3 Evaluation of Brucellosis status in breeding pigs | | | | | |
| 4.4 Evaluation of Brucellosis status in dairy cattle | | | | | |
| 5.Animal key farm | | | | | |
| 6.Serum bank | | | | | |
| 7 Data analysis for diagnosis and survey | | | | | |

Progress Report of Animal Experimental Section

It's seem to be too slow for improving of experimental animal unit to meet the target; because of the haviest and expense of construction problems.

1) Budget;

Almost of Thai and Japanese budget for these unit are the same item.

1990 budget from Thai side got 485,477 ฿ and from Japanese side got 1181,320 ฿

2) Counterparts by experts : - No.

3) Utilization of provide equipment and material.

Most of the equipment and material were useful, but no one can use them into the right way; because of low experience in how to use them.

4) Progress of the project and activity by field:

It was satisfied in mouse production only Others experimental animal are in trial.

5) Future plan

It must be continued in the same plan as 1989.

6) Problem

6.1 construction problems

6.2 Not only lacking of scholarships and experts to study in experimental animal science and also to difficulty of getting permanent workers.

7) Fellowship:

8) Request

8.1 train in

8.2 New building for research on highly infectious disease is needed.

8.3 Improvement of experimental animal building is needed

8.4 Specific isolation area to be an exotic disease research and high toxic substance.

8.5 English Journal or textbook for

8.6 Sterilizing machine (Autoclave)

8.7 Cool room for animal carcass

## Administration

### Budget

The Budget has arranged for National Animal Health and Production Institute Project from 1986-1991 are

| Year | Baht |
|---|---|
| 1986 | 7,107,800 |
| 1987 | 9,705,700 |
| 1988 | 5,858,500 |
| 1989 | 6,391,700 |
| 1990 | 8,115,000 |
| 1991 | 9,682,500 |
| Total | 54,966,200 |

### Personnal

The Thai counterpart in the project are described in the table

| Year | Vet.Res.Div. | NAHPI | Total |
|---|---|---|---|
| 1986 | 109 | - | 109 |
| 1987 | 109 | 91 | 200 |
| 1988 | 109 | 88 | 197 |
| 1989 | 114 | 87 | 201 |
| 1990 | 142 | 87 | 229 |
| 1991 | 142 | 87 | 229 |

The Veterinary Research Division officers are the permanent officers but the NAHPI Project officers are Temporary officers 18 officer were trained

BUDGET IN 1985-1990

Veterinary Research and Animal Health

| Details of ExpendituresGroup | 1986 | | 1987 | | 1988 | | 1989 | | 1990 | |
|---|---|---|---|---|---|---|---|---|---|---|
| ,Salary and Permanent Employees | D.Vet.Res | NAHPI | D.Vet.Res | NAHPI | D.Vet.Res | NAHPI | D.Vet.Res | NAHPI | D.Vet.Res | NAHPI |
| Payment | 6,087,600 | - | 6,921,600 | - | 6,651,500 | - | 7,040,000 | - | 8,486,800 | - |
| 1.1 Salary | 4,746,700 | - | 5,553,900 | - | 5,338,400 | - | 5,681,000 | - | 6,835,400 | = |
| 1.2 Permanent Employees Payment | 1,340,900 | - | 1,367,700 | - | 1,313,100 | - | 1,359,000 | - | 1,651,400 | = |
| Temporary Employees Payment | - | - | - | 5,570,700 | - | 2,267,100 | - | 2,263,700 | - | 3,040,200 |
| Remuneration, Expenses and | | | | | | | | | | |
| Office Materials | 1,798,200 | - | 1,202,200 | 2,300,000 | 1,242,900 | 3,171,300 | 802,000 | 2,472,400 | 978,200 | 2,974,300 |
| 3.1 Remuneration | 91,400 | - | 83,000 | 24,000 | 140,000 | 36,000 | 180,000 | 36,000 | 180,000 | 36,000 |
| ' 2 Expenses | 599,700 | - | 73,100 | 620,000 | 170,800 | 447,400 | 291,100 | 647,400 | 316,100 | 940,800 |
| 3 3 Materials | 1,107,100 | - | 1,046,100 | 1,656,000 | 932,100 | 1,445,000 | 331,800 | 1,789,000 | 481,800 | 1,997,500 |
| Public Utility | 128,400 | - | 108,400 | 1,500,000 | - | 1,500,000 | - | 1,500,000 | - | 1,895,700 |
| Endurable Articles, Land and | | | | | | | | | | |
| Constructions | 689,100 | - | 121,800 | 335,000 | - | 163,000 | - | 155,600 | 722,000 | 204,800 |
| 5.1 Endurable Articles | 8,700 | - | 121,800 | 183,000 | - | 3,000 | - | 120,600 | 722,000 | 204,800 |
| 5.2 Land and Constructions | | | | | | | | | | |
| Cost | 680,400 | 7,107,800 | - | 150,000 | - | 160,000 | - | 35,000 | - | - |
| | | | - | | - | | - | | - | - |
| Total | 8,703,300 | 7,107,800 | 8,354,000 | 9,705,700 | 7,894,400 | 5,858,500 | 7,842,900 | 6,391,700 | 10,187,000 | 8,115,000 |

BUDGET IN 1990-1991

Veterinary Research and Animal-Health

| Details of Expenditures Group | 1990 D.Vet.Res | 1990 NAHPI | 1990 Total | 1991 D.Vet.Res | 1991 NAHPI | 1991 Total |
|---|---|---|---|---|---|---|
| | 10,187,000 | 8,115,000 | 18,302,000 | 12,217,600 | 9,682,500 | 21,900,100 |
| . Salary and Permanent Employees Payment | 8,486,800 | - | 8,486,800 | 9,364,400 | - | 9,364,400 |
| 1. Salary | 6,835,400 | - | 6,835,400 | 7,549,700 | - | 7,549,700 |
| 1.2 Permanent Employees Payment | 1,651,400 | - | 1,651,400 | 1,814,700 | - | 1,814,700 |
| . Temporary Employees Payment | - | 3,040,200 | 3,040,200 | - | 3,058,200 | 3,058,200 |
| . Remuneration, Expenses and Office Materials | 978,200 | 2,974,300 | 3,952,500 | 1,164,200 | 3,922,100 | 5,086,300 |
| 3.1 Remuneration | 180,300 | 36,000 | 216,300 | 187,600 | 54,000 | 241,600 |
| 3.2 Expenses | 316,100 | 940,800 | 1,256,900 | 386,000 | 1,440,800 | 1,826,800 |
| 3.3 Materials | 481,800 | 1,997,500 | 2,479,300 | 590,600 | 2,427,300 | 3,017,900 |
| Public Utility | - | 1,895,700 | 1,895,700 | - | 2,063,700 | 2,063,700 |
| 5. Endurable Articles, Land and Constructions | 722,000 | 204,800 | 926,800 | 1,689,000 | 638,800 | 2,327,500 |
| 5.1 Endurable Articles | 722,000 | 204,800 | 926,800 | 1,689,000 | 309,500 | 1,998,500 |
| 5.2 Land and Constructions Cost | - | - | - | - | 329,000 | 329,000 |

Training and Information Section

| roject : | Implementation : |
|---|---|
| 1. โครงการถ่ายทอดเทคโนโลยี่เพื่องานวิจัย | - จัดประชุม/สัมนา เพื่อแลกเปลี่ยนและถ่ายทอดเทคโนโลยีแก่นักวิจัยจากผู้เชี่ยวชาญทั้งในและต่างประเทศ 2 ครั้ง/ปี |
| 2. โครงการถ่ายทอดเทคโนโลยีแก่นักวิชาการประจำจังหวัด | - จัดประชุม/ฝึกอบรม เพื่อถ่ายทอดความรู้และผลงานวิจัยแก่นักวิชาการประจำจังหวัด 6 วัน/2 ครั้ง/ปี |
| 3. โครงการฟื้นฟูความรู้แก่ปศุสัตว์อำเภอ | - จัดประชุม/ฝึกอบรม เพื่อถ่ายทอดความรู้ในด้านวิชาการแก่ปศุสัตว์อำเภอ 9 เขต 18 วัน/3 ครั้ง/ปี |
| โครงการผลิตสื่อโสตทัศนศึกษา | -ผลิตสื่อโสตทัศนศึกษาเพื่อเผยแพร่งานวิจัย<br>sound slide 4 เรื่อง/ปี<br>video 2 ชุด/ปี<br>Printing Media 3 ฉบับ/ปี |
| 5. เผยแพร่ข้อมูลทางปศุสัตว์ | - เผยแพร่สิ่งพิมพ์เกี่ยวกับงานวิจัย, ระบาควิทยาและบรรณานุกรม |
| 6. โครงการจัดตั้ง "มุมห้องสมุด" ประจำสำนักงานปศุสัตว์เขต | - สนับสนุนการจัดตั้งห้องสมุดประจำสำนักงานปศุสัตว์เขต โดยการสำเนาสิ่งพิมพ์ที่สำคัญ ๆ และสื่อต่าง ๆ จัดตั้ง 2 เขต/ปี |

| Project : | Implementation : |
|---|---|
| 1. Technology transfer for researchers | 1. -To provide the conference/seminar for transfering technology and have the experts, inland and abroad, to give some lectures to the researchers : 2 times/year |
| 2. Technology transfer for provincial livestock personels | 2. -To provide the conference/trianin course for transfering technology and research works to provincial livestock personels :6 days/2 time/years |
| 3. Improvement the knowledge and skill of the district livestock officers | 3. -To provide the training course for improving the skill and refreshing the knowledge of the district livestock officers, esp. in the diagnostic technique, in each region :18 days/3 times/years |
| 4. Audio - visual material production | 4. -To create and produce the audio-visual material for extend the research work by sound slides/ video tape and printed media :-sound slide 4 topics/years :-video 2 topics/years :-printing media 3 issues/years |
| 5. Extension of livestock information | 5. -To publish livestock information in research, epidemiology, and bibliography |
| 6. Establishment of the region's library called "library's corner" | 6. -To support some copied printed and audio-visual materials for the livestock regional offices :set up 2 regious/years |

TRAINING & INFORMATION SECTION

PROGRESS/INS.

| JOB | PROJECT | PROGRESS OF THE PROJECT |
|---|---|---|
| Training and Extension | 1. Provide the training course for researchers | |
| | 2. Provide Video Programs related with Vet.Science or other technology | |
| | 3. Have abroad guest lecturers to transfer technology to researchers | |

| JOB | PROJECT | PROGRESS OF THE PROJECT |
|---|---|---|
| Training and Extension | 4. To produce slide with sound | |

| JOB | PROJECT | PROGRESS OF THE PROJECT |
|---|---|---|
| Information and Library | 1.To compile the list of research in Vet.Science in Thailand | |
| | 2.To compile the research of Vet. Research Div.(1983-1987) | |
| | 3.To compile the list of books (Thai-Eng)in NAHPI Library by Computerization | |
| | 4.Distribute the pamphlets of short information of NAHPI in Thai and English | |

| JOB | PROJECT | PROGRESS OF THE PROJECT |
|---|---|---|
| | 5.Library service | 5.1 circulation and loan<br>5.2 interlibrary loan - 898 times/year<br>5.3 photocopy service - 1,582 papers/year<br>5.4 provide textbook - Thai 685 vol.<br>and plublication - English 799 Vol.<br>5.5 provide journals<br>5.5.1 American Journal of Veterinary Research. 12 c.(monthly)<br>5.5.2 Current Contents.(week)<br>5.5.3 Journal of Animal Science. 12 c.(monthly)<br>5.5.4 Poultry Science. 12 c.(monthly)<br>5.5.5 Research in Veterinary Science. 6 c.(bi-monthly)<br>5.5.6 Science (week)<br>5.5.7 Vet.Bulletin 12 c.(monthly)<br>5.5.8 Vet.Record (week)<br>5.6 distribute LIBRARY - 150 c./vol./month<br>NEWS to livestock officers |

| PROBLEM | SUGGESTION/RESOLUTION |
|---|---|
| 1. No audio-visual(studio), and computer room. | 1. To set up them by separate Training and Information room (next to expert room) into two part , one for studio (workroom for audio-visual production) and the other for computer room (workroom for information production) |
| 2. All of staffs are temporary and have not any experience in this field | 2. To assign an expert to guide us for planning and organizing this job,and a technician of audio-visual equipments to train our staffs |
| 3. We've got three air-conditions and set up blind and film for the windows of the library; but the room faces to the sun in the afternoon so it cannot keep cool that causes uncomfortable for users | 3. To add another one air-condition in the library |

| PROBLEM | SUGGESSION/RESOLUTION |
|---|---|
| 4. We've got only one micro-computer using for information and library but it's not enough and take a long time to input data . | 4. TO set up another one set of moniter and keyboard (except printer) |
| 5. Inadequate journals and textbooks for special field in each section | 5. To provide more budget for library |

| 5-year-plan | Implementation | Additional equipments |
|---|---|---|
| 4.Audio - visual material production | 4. To create and produce the audio-visual material for extend the research work by sound slides/ video tape and printed media<br>:-sound slide 4 topics/years<br>:-video 2 topics/years<br>:-printing media 3 topics/years | |
| 5.Extension of livestock information | 5. To publish livestock information in research, epidemiology, and bibliography | |
| 6.Library called "library's corner" | 6. To support some copied printed and audio-visual materials for the livestock regional offices<br>:set up 2 regions/years | |

| 5-year-plan | Implementation | Additional equipments |
|---|---|---|
| Training and extension | | |
| .Technology transfer for researchers | 1. To provide the conference/ seminar for transfering technology and have the experts, inland and abroad, to give some lectures to the researchers : 2 times/year | 1. Projection stand 2 unit (for slide projector)<br>2. Light table 1 unit (for slide production)<br>3. Copy stand (include photoflood) 1 unit<br>4. Slide duplicating unit 1 unit<br>5. Tripod for camera 1 unit<br>6. Exposure meter (for photography) 1 unit<br>7. Microcomputer (Monitor and Keyboard) 1 set<br>8. Air-condition (for library) 1 unit<br>9. Razor printer 1 unit<br>10. Printing machine (include plate maker, book binder. paper guillotine) 1 set |
| 2. Technology transfer for provincial livestock personels | 2. To provide the conference/ trianing course for transfering technology and research works to provincial livestock personels : 6 days/2 time/years | |
| 3. Improvement the knowledge and skill of the district livestock officers | 3. To provide the training course for improving the skill and refreshing the knowledge of the district livestock officers, esp. in the diagnostic technique, in each region :18 days/3 times/years | |

TECHNOLOGY TRANSFER & INFORMATION CENTER SECTION

| JOB | ACTIVITY | PROGRESS OF THE ACTIVITY |
|---|---|---|
| Training and Extension | 1. To train livestock personels by each section researchers | 1.1 Training the veterinarians from Laos in "Laboratory technics" |
| | | 1.2 Training the veterinarians from Sri - Lanka in "Swine Diseases" |
| | | 1.3 Training the livestock personels from Senegal in "Disease Effecting Reproductive Performance of Swamp Buffalo" |
| | 2. To produce sound slides | 2.1 "The Protective Effect of Swine Fever vaccines Against challenge with a field isolate" : Dr.Sujira Pachariyanon et al. |

| JOB | Activity | PROGRESS OF THE PROJECT |
|---|---|---|
| Training and Ectension | 3. To distribute "Library News" which is the brief knowledge to provincial livestock officers | 3.1 150 copies/vol./mth. |
| | 4. To distribute the pamphlets of short information of NAHPI in Thai and English for the visitors | 4.1 200 copies |

| JOB | ACTIVITY | PROGRESS OF THE ACTIVITY |
|---|---|---|
| Information and Library | 1.To compile the title list of research in Vet.Science in Thailand | 60% |
| | 2.To compile the research of Vet. Research Div. | 40% |
| | 3.To compile the list of books (Thai-Eng)in NAHPI Library by Computerization (1989) | 100% |
| | 4.Library service | 4.1 circulation and loan<br>4.2 interlibrary loan - 320 times/year<br>4.3 photocopy service - 950 papers/year<br>4.4 provide textbook and publication - Thai 130 vol.<br>- English 84 Vol.<br>4.5 provide journals<br>4.5.1 -8 journals in English<br>4.5.2 -18 journals in Thai |

| PROBLEM | SUGGESTION/RESOLUTION |
|---|---|
| 1. No audio-visual(studio), and computer room. | 1. To set up them by separate the big room which next to expert room into two parts, one for studio (workroom for audio - visual production) and the other for computer room (workroom for information cunter) |
| 2. All of staffs are temporary and have not any experience in this field | 2. To assign the experts to guide us for planning and organizing this job,and some technicians for audio-visual productions |
| 3. We've got three air-conditions and set up blind and film for the windows of the library, but the room faces to the sun in the afternoon so it cannot keep cool that causes uncomfortable for users | 3. To add another one air-condition in the library |

| PROBLEM | SUGGESSION/RESOLUTION |
|---|---|
| 4. We've got only one micro-computer using for information and library but it's not enough and take a long time to input data . | 4. To set up three sets of computers in more efficacy than the old one. |
| 5. Inadequate journals and textbooks for special field in each section | 5. To provide more budget for library |

## Technology Transfer & Information Center Section Plan

| Project | Implementation | Additional equipments |
|---|---|---|
| 1.Technology transfer for researchers | 1. To provide the conference/ seminar for transfering technology and have the experts, inland and abroad, to give some lectures to the researchers : 2 times/year | 1. Studio room for audio-visual material production<br>2. Projection stand 2 unit'(for slide projector)<br>3. Light table 1 unit (for slide production)<br>4. Copy stand (include photoflood) 1 unit<br>5. Tripod for camera 1 unit<br>6. Exposure meter (for photography)1 unit |
| 2.Technology transfer for provincial livestock personels | 2. To provide the conference/ trianing course for transfering technology and research works to provincial livestock personels : 6 days/2 time/years | 7. Microcomputer (Monitor and Keyboard) 3 sets<br>8. Air-condition (for library) 1 unit<br>9. laser printer 1 unit<br>10. Printing machine (include plate maker,book binder, paper guillotine) 1 set |
| 3.Improvement the knowledge and skill of the district livestock officers | 3. To provide the training course for improving the skill and refreshing the knowledge of the district livestock officers, esp. in the diagnostic technique :18 days/3 times/years | 11. Video editing machine 1 pair<br>12. Facsimile 1 set<br>13. Light pointer 2 unit<br>14. Camera accessories - |

| Project | Implementation | Additional equipments |
|---|---|---|
| 4.Audio - visual material production | 4. To create the audio-visual materials for extend the research works by sound slides/ video tapes and printed medias<br>:-sound slide 4 topics/years<br>:-video 2 topics/years<br>:-printing media 3 topics/years | |
| 5.Extension of livestock information | 5. To distribute livestock informations in research, epidemiology, and bibliography that we have centralized them to NAHPI | |
| 6.To set up the regional library called "library's corner" | 6. To support some copied publication and audio-visual materials for the livestock regional offices<br>:set up 2 regions/years | |

付属資料－4　日本人専門家チーム報告書

# The Progress Report in National Animal Health and Production Institute (NAHPI) Project

December 25, 1990
Japanese Expert Team Leader
Dr.Tetsuo Kumagai

## I. Introduction

NAHPI project started in December 1986 with five year programme consisting of NAHPI and FMD Production Center.

In the initial stage in NAHPI, a large effort was required for establishment of the institute and research activities were mainly focused on the survey and diagnosis of animal disease in order to promote the project implementation for next step. In the midle stage of the project, the stress was shifted on important disease pointed out by former Director General of DLD emphasizing collaboration programme among the section concerned. It requires a great effort and concentration of Thai and Japanese staff to achieve the new programme.

With regard to FMD site, the project activity rather differ from its NAHPI. Since former Animal Health Improvement (AHI) Project succeded in development of technics and know-how for mass production of FMD Vaccine, the importance is attached to the research on diagnostic method and imporvement of vaccine quality in an attempt to expand the results from former AHI project.

1.The provision of Equipment and Materials by JICA

Under JICA technical cooperation program, the equipment and materiels worth about 272 Million yen were provided for the project from the 1986 to the 1989 Japanese fiscal year. In the 1990 fiscal year, about 90 Million yen worth of equipment and material will be provided for the project.

Table 1-1.

| | |
|---|---|
| 1986 Japanese Fiscal Year | |
| Equipment & Materials | 65.5 Million Yen |
| 1987 Japanese Fiscal Year | |
| Equipment & Materials | 47.0 Million Yen |
| Carried E & M with Experts | 4.2 Million Yen |
| Repairing & Modifing Facilities | 0.5 Million Yen |
| (sub-total | 51.7 M ¥) |
| 1988 Japanese Fiscal Year | |
| Equipment & Materials | 69.3 Million Yen |
| Carried E & M with Experts | 6.3 Million Yen |
| Repairing & Modifing Facilities | 2.0 Million Yen |
| (sub-total | 77.6 M ¥) |
| Subtotal (1986 - 1988 Japanese Fiscal Year) | 194.8 Million Yen |

Table 1-2.

| | |
|---|---|
| 1989 Japanese Fiscal Year | |
| Equipment & Materials | 70.8 Million Yen |
| Carried E & M with Experts | 4.3 Million Yen |
| Repairing & Modifiing Facilities | 2.0 Million Yen |
| (sub-totall | 77.1) |
| Total (1986 - 1989 Japanese Fiscal Year) | 271.9 Million Yen |
| Grant Aid (Building & Equipment) | 2,357.0 Million Yen |

2. The acceptance of counterpart study in Japan

In the past period of the project operation from the 1986 to the 1989 Japnese fiscal year, 17 research staff were accepted for study and seven research staff are studying in Japan now under the 1990 fiscal year program as shown in Table-2.

In addittion to those, high - ranking officer,Director General and Deputy Director, were invited for observation tour in December 1989.

| Japanese Fiscal Year | no. of researcher | |
|---|---|---|
| 1986 | 2 | |
| 1987 | 6 | |
| 1988 | 4 | |
| 1989 | 5 | |
| | 2 | observation tour |
| 1990 | 7 | studying |

3.The assignment of experts

Since the project started in 1986 until 1990, 40 experts were assigned to the project; long-term and short- term were 18 and 22 experts, respectively.

The details are showed in Table 3-1,3-2

| Japanese Fiscal Year | Long-term | Short-term |
|---|---|---|
| 1986 | 6 | 2 |
| 1987 | 3 | 7 |
| 1988 | 2 | 4 |
| 1989 | 5 | 6 |
| 1990 | 2 | 3 |

4.Suggestion

In order to carry out the collaboration program mentioned before, the establishment of systematic research strucure is indispensable amang the section concerned.

It requires classification (categolization) of research subject to implement the whole NAHPI activities effectively.

Information and training services are important activities of the NAHPI. It is essential to promotion of these activities to publish the research out come and to execute the training program.

The details are described in the attached papers.

## COLLABORATIVE RESEARCH PROGRAM

The important and difficult diseases should be approachoed in diverse direction and needs the close collaboration of the persons or sections of different fields concerned.

### Subject

The particular importance of FMD, swine fever, paratuberculosis, cupper deficiency of cattle and diseases in imported purebred cattle has been indicated by the Director General and the other leading staff of DLD, and the organization of the collaborative research program on these diseases has been proposed at the NAHPI Project Joint Meeting, July, 1989. Any other important disease or item concerning animal health and production is desirable to come under the collaborative research program.

### Organization

The collaborative research team is organized of the personel or group presently concerning the particular disease in the NAHPI. With the progress of the project, will be included the other personels in the NAHPI and the other institution such as, Regional res. & Diagnosis Center, Dis.Cont.Div., Vet.Serv.Div., Regional and District Livestock office and Universities.

### Swine fever

Swine fever study team was formed of 5 staff from Virology, Pathology, Epidemiology section and 3 JICA experts, Sep., 1989. The team has so far investigated SF in 3 herds of medium or large size where vaccination was practiced. The investigations were made in order to find the characteristics of disease conditions, source of virus, way of spread in the herds and management. Such case study will be countinued.

In the second phase of the program, epidemiological investigation is expected to be conducted in the area in Nakhornpathom where SF is highly endemic. The investigation aims at the establishment of the Areal SF Control Program. The collaborations with Dis. Cont. Div. and Vet.Serv.Div., Regional and District Livestock Office. are necessary.

Virological, immunological and pathological examinations of field samples and experimental works in laboratory have provided valuable informations to understand and explain the disease conditions in the field.

The results of field and laboratory investigations so far obtained indicate:

1 SF in Thailand is mostly typical and can be identified by ordinary laboratory methods.

2 The vaccines presently used are effective, but vaccination

program should be revised.

3 SF infection tend to persist for many months in the herd holding many sows which farrow continuously. The virus may be maintained in the population of suckling and weanling piglets before or shortly after vaccination.

4 SF spreads even among adult pigs with antibody of low titer at the time of some weeks after vaccination. Clinical signs in this case are not typical. Laboratory test including the estimation of neutrlizing antibody titer is essential to identify the SF infection.

5 Farmers and even veterinarians lack in the enough knowledge to prevent the herd from invasion of the virus from outside and to control the disease after outbreak. They depend on only vaccination.

## Survey of health conditions of imported cattle.

Recently many dairy and beef cattle of purebred or croosbred are being imported mostly from Australia and New Zealand. The cattle are rather vulnerable to tropical environment and to a variety of infectious diseases which are endemic in Thiland and to which indigenous cattle are relatively resistant.

For the past 2 years, more than 10,000 cattle have been imported and many of them suffered from a variety of illness including illness with generalized and nervous symptomes, abortion, reduced milking, some cases being fatal. Some cases were proved to be caused by Trypanozoma and Theilleria infection, but with the most cases, the cause has not been determined.

The disease of imported cattle may be mostly complex syndrome caused by multiple etiology including pathogens, management and environmental factors.

To establish the health control scheme of imported cattle, the survey of health conditions including diseases, management and environment may be necessary.

Epidemiology Section and Immunoserology Section are perfoming the immunological tests of tuberculosis, paratuberculosi and Brucellosis of imported cattle.

Parasitology section investigated the protozoal infection in herds of imported cattle.

Virology section proved the infectin in Thailand of impoprted cattle with some arthropod-born viruses which were prevalernt among indigenous cattle.

In the first stage of collaborative research program, above ongoing activities will be organized into the program. Collection of informations from field should be accerlerated.