One Health Module / One Health Ally Course
Submodule 4 One Health on-site Training
報告書 Report

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活動報告 [Activity Report]

タイトル [Course Title]	M404. **Surveillance of foodborne diseases and antimicrobial resistant bacteria in Mongolia**
実施期間 [Periods]	2024年6月2日-6月12日
共同実施者 [Other participants]	Jayaweera Muhandiramge Sasini, Li Yonghan, Bulgan Erdenebat
言語 [Language]	English
実施場所 [Location]	School of Veterinary Medicine, JICA Mongole Office, National Center for Communicable Diseases, Institute of Veterinary Medicine, Food and Agriculture Organization

この活動に参加した理由（200字程度）[The reason why you participated in this activity (around 120words)]

Foodborne diseases pose a significant threat to food safety and public health in developing countries. I engaged in this activity primarily to get knowledge on analyzing the occurrence of foodborne diseases and identifying the specific factors responsible, such as antibiotic resistance. In the future, I plan to utilize the knowledge and abilities acquired from this course to develop research initiatives focused on epidemiological inquiry. Specifically, I aim to assess the presence and potential danger of antibiotic-resistant bacteria in animals in Southeast Asia. Additionally, in this course, I aim to develop the appropriate mindsets, abilities, and attitudes necessary for establishing and maintaining strong international relationships during collaborations with overseas universities, institutes, or organizations.

実施内容（2ページ程度、写真・図表含む）
[Activities details (up to 2 pages providing photos, figures, and tables)]

I. SAMPLING

- At sheep and goat's farms (90km from Ulaanbaatar)
- Collecting samples at Cattle's farms (20 km from Ulaanbaatar)

Picture 1. Fecal sample collection in sheep/goat farms and cattle farm

II. LABWORKS

1. Antimicrobial resistance antibacteria experiment: for 20 sheep fecal samples, 20 goat fecal samples, 21 cattle fecal samples

- **WORKFLOW**
  - Votex samples well
  - Take 1 disposable loop and spread to
    - Chrom agar ECC without any antibiotics
    - Chrom agar ECC with CPFX (Ciprofloxacin)
    - Chrom agar ECC with CTX (Cefotaxime)
  - Incubate in incubator (37°C) for 20-24 hours
- **RESULTS**

- All sheep and goat samples produce colonies with blue colour on ECC agar without antibiotis. → presence of E.coli. But There are no colonies growed in ECC with CPFX and CTX → no bacteira are resistant to CTX and CPFX
- Cattle in Farm A (11 samples). 10/11 positive samples for ECC agar, 1 sample positive for CPFX (AC1), no positive sample for CTX
- Cattle in Farm B (10 samples). 9/11 positive samples for ECC agar, no sample positive for CPFX, 1 positive sample for CTX

2. EHEC (enterhemorrhagic Escherichia coli) isolation experiment

- **WORKFLOW**
  - After AMR experiment. Then Add 5mL 2X mEC into each sample (selective growth) → incubate at 37°C for 24 hours
  - In the next day, inoculate the samples in both MacConkey containing cefixime and tellurite (CT-MAC) and CHROM STEC → incubate at 37°C for 24C
- **RESULTS**
  - Sheep samples: Farm A: 4/10 positive samples including SA2→SA4, SA10). Farm B: no positive samples (All the positive samples produce colonies in both CT-MAC and STEC media)
  - Goat samples: Farm A. 5/10 positive samples (GA1 → GA4, GA9). Farm B 2/20 positive samples (BG5, BG10)
  - Cattle Farm A: CT-MAC medium: 9/11 positive samples (AC1 → AC4, AC6, AC7, AC9 → AC11). CHROM STEC medium: 4/11 positive samples (AC2, AC3, AC6, AC11)
  - Cattle Farm B: CT-MAC: 9/10 positive samples (BC1, BC2, BC4 → BC10). CHROM STEC 5/10 samples (BC2, BC4, BC5, BC7, BC8)
- **SUMMARY**

Samples	Farm (no. samples)	ECC	ECC+CPFX	ECC+CTX	CT MAC	STEC
Sheeps	Farm A (10)	10	0	0	4	4
	Farm B (10)	10	0	0	0	0
Goat	Farm A (10)	10	0	0	5	5
	Farm B (10)	10	0	0	2	2
Cattle	Farm A (11)	10	1	0	9	4
	Farm B (10)	9	0	1	9	5

Picute 2. Enterhemorrhagic Escherichia Coli colonies were found on CT-MAC (left) and CHROM-STEC (right) media.

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今回の活動経験が、今後のOne Healthに関連した活動、国際共同研究、国際協力、国際連携等に与える影響（500字程度）[Impact of the experience on future One Health activities, international collaborative research, international cooperation, international collaboration, etc. (around 300 words)]
The skills and knowledge acquired through fieldwork and laboratory work in this course serve as a crucial and strong basis for me to independently develop similar research projects in my country and other developing nations. These projects aim to provide scientific data on the occurrence and characteristics of foodborne diseases and antimicrobial resistant bacteria in animals. This measure could aid in the regulation of inappropriate antibiotic usage and mitigate the problem of antimicrobial resistance. Furthermore, the One Health course instilled in me a growth attitude and fostered my leadership abilities, including traits such as perseverance, dedication, passion, courage, mindfulness, and compassion. I am especially interested in imparting these principles to the next veterinarian generation in both developing and developed nations, by facilitating increased possibilities for them to engage in cross-cultural exchanges and get exposure to diverse and cutting-edge educational systems across different countries. Finally, the various experiences and activities in the course have greatly inspired me to actively engage in international collaboration for the establishment of a global network connecting universities and institutes across different disciplines. This network would facilitate international research efforts aimed at addressing shared challenges in One Health, with the goal of safeguarding the health of both humans and animals across countries. .
備考 [Remarks]

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