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

報告者 [Reporter]

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活動報告 [Activity Report]

タイトル [Course Title]	The Role of one health in zoonotic parasite and wildlife conservation in Thailand
実施期間 [Periods]	26th – 29th June 2023
共同実施者 [Other participants]	Atefe Fathi, Nyein Chan Soe, Nada Arayaskul, 马卓伟
言語 [Language]	English
実施場所 [Location]	Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand & Faculty of Veterinary Science, Mahidol University, Kanchanaburi campus, Thailand

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)]

The One Health Ally course is a comprehensive program focusing on animal, human, and environmental health interconnectedness. It provides practical experience and in-depth knowledge of different regions' environmental factors and climate conditions. The course equips participants with skills to address pressing global issues such as climate change, pollution, and overpopulation. It emphasizes resource consumption, and sustainability, and offers practical solutions. Previously, I worked in the Indian Railways, managing waste segregation and wastewater treatment. Witnessing the impact of overpopulation, pollution, and waste in my country motivates me to make a positive difference. The course offers an ideal platform to deepen my understanding of environmental challenges and their solutions. Topics covered include zoonoses, food safety, and climate change, with practical training in One Health research. Networking with fellow participants and professionals in the field will be valuable for future endeavors.

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)]

26th June 2023

Associate Professor. Dr. Sivapong Sungpradit gave a lecture about One health philosophy which include veterinarians, nurses, public health workers, physicians, economists, and educators. The lecture was followed by zoonotic helminth infections- Using Polymerase Chain Reaction-Restriction, Fragment Length Polymorphism for Detecting Soil-Transmitted Helminth (Genus Trichostrongylus) in Livestock, Farmers, and Environment. The lecture was focused on materials and methods and results were discussed. Most infection of Opisthorchis viverrine was found in North East Thailand reason. The presence of Hookworms was maximum in south Thailand reason at 9.84 %. The presentation were discussed on

1. Prevalence of human Trichostrongylus.
2. Prevalence of livestock Trichostrongylus.
3. Contamination of helminth egg and larvae of raw vegetables
4. Trichostrongylus species identification
5. Trichostrongylus and hookworm co-infection
6. Benzimidazole resistance

In the afternoon session, a visit to one health village was organized. The fecal sample of cattle and goats were collected. The samples were tested using simple flotation techniques and centrifugal sedimentation techniques. The sample then were observed using the microscope for the presence of parasites. The sample of M1 and C1 were found to be negative and other samples were found infected with parasites

27th June 2023

Associate Professor Nae Tanpradit gave a lecture on pathogen transmission at the human-wildlife interface and elephant use in the tourism industry in Thailand. We had a presentation at Salak Phra Wildlife Sanctuary on the rehabilitation of Banteng. We did training on using trap cameras and use of radio collars for supervision of the movement of Banteng in the sanctuary. We saw the open area for preparing Banteng for wildlife habitation. In the afternoon we visited the Elephant camp for physical examination. We examined following

1. General observation: Assessing behavior, body condition, posture, and overall demeanor
2. Vital signs: Measuring heart rate, respiratory rate, temperature, and blood pressure
3. Physical assessment: Examining the skin, eyes, ears, trunk, mouth, feet, and musculoskeletal system

The scoring was done on the basis of condition and the elephant was found to be healthy.

28th June 2023

Associate Prof Saengduen Moonsom gave a lecture on Global trends in the One Health issues approach to address emerging infectious diseases in which she talked about the difficulty faced to lead a large number of professionals from various departments. She was able to lead everyone from the lab technicians to the government department about the importance of one health. She also gave a lecture on the Criteria for microscopic diagnosis of intestinal protozoa. This lecture was followed by a lecture on the Life cycle, morphology, and techniques for important intestinal helminth identifications by Prof Aongart Mahittikorn. We also observed different protozoa at various stages of the lifecycle. Then we prepared a sample for observation of protozoa from Human feces collected from all over Thailand.

29th June 2023

Associate Professor Dr. Porntip Petmitr gave a lecture on the Lifecycle, morphology, and diagnosis of malarial parasites. We understood various plasmodium species and their effects on Human health. We also saw malarial parasites' life stages for Vivax, falciparum, and others. We prepared the sample and observed the presence of parasites in human blood. We used a thick smear and a thin blood smear.



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 one health approach is a holistic and interdisciplinary approach that recognizes the interconnectedness of human health, animal health, and environmental health. The COVID-19 pandemic has served as a stark reminder of the importance of the one-health approach. It has highlighted the fact that zoonotic diseases, which are infectious diseases that can be transmitted between animals and humans, can have devastating consequences on public health and global economies. As a mechanical engineer specializing in polymer technology, my previous exposure to the field of zoonotic diseases may have been limited. However, upon exploring the topic, I discovered several areas within polymer technology that can serve as valuable collaborations for the prevention and control of zoonotic diseases. By leveraging these advancements, the principles of the One Health approach, which recognizes the interconnectedness of human, animal, and environmental health, can be applied effectively. Let's delve into some of these areas:

1. Barrier Materials Development: Polymer technology offers the potential to engineer barrier materials that can effectively impede the transmission of pathogens. By designing polymer-based membranes, films, or coatings with high barrier properties, it becomes possible to create protective barriers in settings where zoonotic disease transmission is a concern. These materials can be incorporated into personal protective equipment (PPE), medical devices, and even packaging to minimize the risk of transmission.

2. Antimicrobial Polymers: The development of antimicrobial polymers is another promising avenue. These polymers can possess inherent properties or be modified to actively inhibit the growth and survival of microorganisms, including zoonotic pathogens. By incorporating antimicrobial polymers into various surfaces or materials, such as coatings on high-touch surfaces or medical instruments, the spread of zoonotic diseases can be reduced.

3. Self-Cleaning Surfaces: Polymer coatings with self-cleaning properties have the potential to mitigate the spread of zoonotic diseases. These surfaces can be designed to repel and eliminate pathogens through mechanisms like photoactivity or surface modifications. By implementing self-cleaning polymer technologies, high-risk areas can be better protected against the persistence and transmission of zoonotic pathogens.

4. Bioactive Polymers: Bioactive polymers can actively interact with biological systems and hold promise in the prevention and treatment of zoonotic diseases. By developing bioactive polymers that can stimulate the immune system or modulate specific biological responses, it becomes possible to enhance the body's defenses against

zoonotic pathogens. These polymers can be incorporated into various medical devices or systems to support immune responses and reduce the severity of zoonotic infections.

5. Drug Delivery Systems: Polymer technology can also contribute to the development of targeted drug delivery systems for zoonotic diseases. By encapsulating antiviral or antimicrobial agents within biocompatible polymers, it becomes feasible to deliver these drugs directly to the affected areas, enhancing their efficacy while minimizing systemic side effects. Controlled release systems can be designed to release the drugs over specific time intervals, ensuring optimal therapeutic outcomes.

While your background as a mechanical engineer studying polymer technology may not have included direct exposure to zoonotic diseases, the diverse applications within polymer science present ample opportunities for collaboration and innovation. By exploring these areas, you can contribute to the development of materials, coatings, and systems that play a pivotal role in preventing, controlling, and mitigating the impact of zoonotic diseases on public health. Collaborating with experts in relevant fields and staying updated with advancements in both polymer technology and zoonotic disease research will be crucial in driving progress towards a safer and healthier future for all.

備考 [Remarks]

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