

# Lao – Japan Lab / Parasitology 2020-2021

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The aims of the Parasitology Laboratory are to carry out research and training in the area of parasitology to better understand parasitic diseases affecting the Lao population and to propose ways to mitigate possible infections, and to provide technical supports to the national-level institutions in the areas of malaria and

other parasitic diseases.

## **Executive summary**

Arboshield project aims to improve the capacity of surveillance, outbreak detection/response, diagnosis/treatment/prevention of vector-borne diseases, as well as biosafety/security, especially for the Lao Military sector. The role of the Lao-Japan Parasitology lab in this project is to improve malaria surveillance and diagnosis for the military sector and the civil sector through training and quality assessment. We conducted a short training course on malaria for staff in military hospitals and civilian hospitals. One year of on-the-job training of military staff in the Institute of Preventative Medicine was also conducted. As a quality assessment, we analyzed blood samples (n=320 in 2019; n=23 in 2020) by malaria RDT and PCR, collected from malaria suspected patients in the military hospitals.

An antimalarial drug therapeutic efficacy study was launched in November 2019 to evaluate drug efficacy by in vitro culture technique and molecular markers at Institut Pasteur du Cambodia (IPC). In this study, IPL is responsible for sample collection and preservation in liquid nitrogen in a collaboration with the Center of Malariology, Parasitology and Entomology (CMPE), the Lao Ministry of Health and the local healthcare facilities. Live *Plasmodium falciparum* samples were collected from malaria patients who participated in this study in Savannakhet, Salavan and Champasak provinces. Sixty-nine samples and five samples were collected from Savannakhet and Salavan provinces, respectively (as of 5 November 2020). Currently, it is impossible to send the frozen *P. falciparum* samples to IPC because there are no flights between Lao PDR and Cambodia, and land border is also closed due to the pandemic of COVID-19. This study is financially supported by WHO Western Pacific Regional Office.

We initiated “5-aminolevulinic acid (5-ALA) asymptomatic malaria project” in October 2019. 5-ALA is a health food supplement produced by neopharma Japan Co., Ltd. and commercially available in Japan and other countries. Some studies showed that 5-ALA has the efficacy to kill or inhibit *Plasmodium* growth both in vitro and in vivo.

The objective of this project is to evaluate the efficacy to kill or inhibit *Plasmodium* growth among asymptomatic *Plasmodium* carriers in malaria high endemic villages in Savannakhet province. Large-scale screening surveys for asymptomatic *Plasmodium* carriers were conducted in Nong and Sepon districts, Savannakhet province in October-November 2019 (n=2,716), December 2019 (n=1,353) and February 2020 (n=2,260). After malaria PCR analysis, we identified 66 eligible candidates for this study. The supplement administration was initiated in February (n=40), March (n=4) and June (n=20) 2020, respectively. Two of 66 eligible candidates were not included for the study. Currently, we

continue to follow-up the subjects to evaluate the efficacy of 5-ALA supplement for one year. If this supplement is effective for asymptomatic *Plasmodium* carriers to clear the parasites, this will be an effective tool to eliminate asymptomatic *Plasmodium* carriers in the endemic areas.

**Team:**

Scientist: Moritoshi IWAGAMI, PhD, Laboratory Manager

Junior Scientists:

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Sengdeuane KEOMALAPHET, MD

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Trainees:

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Phouniloud HONGVANGTHONG, MD (July 2020-February 2021)

Visiting Scientists:

Phonepadith XANGSAYARATH, MD, PhD

Masami NAKATSU, PhD

**Project carried on in the lab:**

+ Arboshield Project

+ Antimalarial Drug Therapeutic Efficacy Study

+5-Aminolevulinic acid (5-ALA) Asymptomatic Malaria Project