

## Exchange Program

Thailand

Mahidol University

Mahidol-Osaka Center for Infectious Diseases  
(MOCID)

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Health Science

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## **Introduction**

I would like to learn the researches that I can't perform in Japan; therefore, I am applying this program. In southeast Asia, there are several mosquito-borne viral infectious diseases which are prevalent only in tropical and subtropical regions. Among them, Dengue fever is an important one that needs to be paid attention. Human is infected with Dengue viruses by being bitten by mosquito carrying the viruses. Now this virus is not endemic in Japan; however, the infection cases are found every year among overseas travelers. In addition, there is a possibility that global warming potentially makes mosquitoes carrying this virus possible to inhabit in Japan in a future. So, I would like to learn how the Dengue researches are carried out among research groups in southeast Asia. In addition, I would also like to learn how rapid diagnostic methods for viral infectious diseases are established. Mosquitoes carrying dengue viruses are prevalent in southeast Asian countries including Thailand; therefore, I believe that it is possible to learn how to perform researches that I can't perform in Japan. And, during the cooperation with individuals in a foreign country, I may face the difficulties not only in conducting research activities, but also in daily life because of possible communication problems in a different cultural environment. I would like to feel and find the way to overcome such difficulties in this occasion.



## About my research

Mhahidol-Osaka Center for Infectious Diseases (MOCID) is a laboratory of Osaka University located in Mhahidol University. In this laboratory, mosquito-borne viral infectious diseases which are prevalent only in tropical and subtropical regions, like dengue virus and chikungunya virus are researched. The subject of my research was “Diagnosis of Dengue Suspected Patients In Nakhonsawan”.

## Introduction

Dengue virus is transmitted by *Aedes aegypti* or *Aedes albopictus*. Dengue virus exist as 4 serotypes( I ~IV), and it cause dengue fever in 50-100million infections per year. 2.5 billion people live in dengue-endemic tropical and subtropical areas.

## Objective

The objective of this research is diagnosis of dengue suspected patients to detect viral RNA by RT-PCR and antibodies against dengue by ELISA.

## Methods

### Viral RNA detection

24 acute-phase serum samples (Nakhonsawan province, febrile illness, 2013 Jan-2013 Apr, 7-56 years old) were used. RNA was extracted from sera and performed RT-PCR using QIAamp Viral RNA Mini (QIAGEN). And dengue universal primer was used in 1<sup>st</sup> PCR, and type specific primer was used in 2<sup>nd</sup> PCR.

### Antibodies detection

18 acute-convalescent pair serum samples and 6 acute-phase serum samples were used for ELISA (Dengue Virus IgG DxSelect, Dengue Virus IgM DxSelect (FOCUS Diagnostics)).

## Results

### Viral RNA detection

In 1<sup>st</sup> PCR, 23 samples were positive and 1 was negative. In 2<sup>nd</sup> PCR, 2 samples were dengue 1 and dengue 2, 7 samples were dengue 3, 3 samples were dengue 4 and 9 samples were unknown.

#### Antibodies detection

23 samples were IgG positive and 1 was IgG negative. 18 samples were IgM positive and 6 were IgM negative. About acute-convalescent IgG, most of them were higher index at convalescent than at acute, and they were positive at acute. In 1 sample, IgG was negative at acute and at convalescent IgG was positive. And in 1 sample, IgG was positive at acute and IgG was negative at convalescent (Table 1). Relationship between Ig level and PCR was listed in Figure (Fig 1).

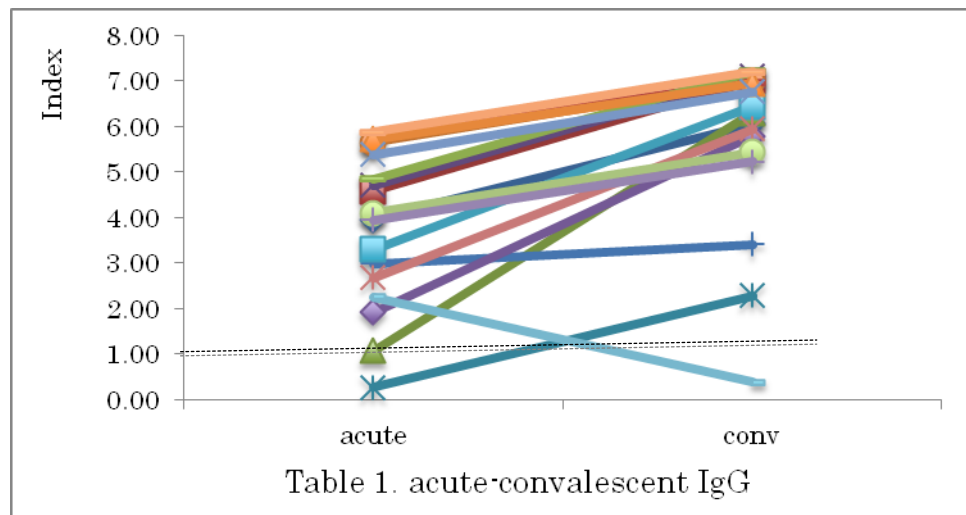


Fig 1. Relationship between Ig level and PCR

		Acute		PCR	
				+	-
Ig	G	+		22	1
		-		1	0
	M	+		17	1
		-		6	0

## Summary

24 dengue suspected serum samples were investigated by PCR and ELISA. And 23 samples were positive and 1 was negative by PCR. It is thought that this 1 sample was another flavivirus patient like Japanese encephalitis virus, because some viruses bring on similar symptom. The sample whose IgG was negative at acute and at convalescent IgG was positive is thought that this patient was primary dengue infection. 1 sample was IgG positive at acute, but IgG was negative at convalescent. I don't know why IgG became negative.

## About Thailand

I visited many places on weekend. I visited royal palace, Ayutthaya and Sangkhla Buri. The place where I most enjoyed was sangkhla Buri. I rode on an elephant there.



## Conclusion

I enjoyed my staying. Through this exchange program, I had wonderful experience. I could perform experiment using serum samples of dengue patients. And I could see the dengue fever patients. Also I could learn cultures of Thailand. To make use of experience of this program, I want to study hard.