

1. ABSTRACT

Project Code: RTA 04/2539

Project Title: PATHOPHYSIOLOGY OF DISEASES PREVALENT IN THAILAND.

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Project Period: 1996-1999

OBJECTIVES

To operate a network of bio-medical research aiming at the study of the pathogenic mechanisms of diseases prevalent in the country. Three areas include:

1. Pathophysiology of a group of prevalent diseases in the Northeast of Thailand: Renal Tubular Acidosis, Lai-Tai, and Renal Stone.
2. Dengue virus infection and a newly discovered Densonucleosis viruses in indigenous mosquitoes.
3. Pathophysiology and complications associated with Thalassemia

HIGHLIGHTS OF THE RESULTS:

- 1) Discovery of a new genetic mechanism causing distal renal tubular acidosis found in group of children in Songkla and Khonkaen; related to the anion exchanger 1 (AE1) gene mutations with and without association with Southeast Asian Ovalocytosis (SAO).
- 2) Establishment of families with adult type of endemic renal tubular acidosis (eRTA) in Khonkaen and Ubolrajathanee ready for the identification of gene(s) responsible for the pathogenesis of one of the common endemic diseases - eRTA, either by candidate gene or genome screening techniques.
- 3) Discovery of a defective protein, nephrocalcin, that might contribute to the pathogenesis of renal stone in Isan.
- 4) Delineate a new mechanism that might play a key role in complement activation and generation of phlogistic cytokines and chemokines responsible for the vascular leakage in dengue hemorrhagic fever.
- 5) Describe the molecular evolution of dengue serotype 2 circulated in Bangkok and establish technology for molecular subtyping of the viruses.
- 6) Discovery of a new mechanism initiated by defective red cells from thalassemia patients, the generation of erythrocytic microvesicles, that might be the key factor leading to the increased susceptibility to infection in these patients.
- 7) Define renal function abnormalities in patients with thalassemia.

SIGNIFICANCE:

A network of scientists conducting basic bio-medical research on medical problems prevalent in the country and the region has been established. The program has resulted, at the time of report, in more than 10 publications, all in international journals; the program has assisted in establishing a network of efficient academic programs producing graduate students, a network of international research and academic collaborations, and a number of field sites with patients' databases. Most important of all, the group has established keystones in the fields of particular problems that would eventually lead to better understanding of the pathogenic mechanisms, more publications and eventual diagnoses, treatments and prevention of a group of diseases affecting large number of population.

KEYWORDS: dengue hemorrhagic fever, renal tubular acidosis, renal stone, Thalassemia