



CHAPTER I

INTRODUCTION

Typhoid Fever as a Public Health Problem

Typhoid fever is an infectious disease commonly seen in tropical countries, including Thailand. The annual reports concerning the incidence of typhoid fever in Thailand between 1975-1984 are summarised in Figure 1, from which it can be seen that the attack rate of typhoid fever is rising from year to year. So that in 1984 (33 per 100,000) it was higher than in 1983 (30 per 100,000) or in 1978 (20 per 100,000). The mortality rate is also higher (1). However the number of attacks are certainly underestimated as many are unreported e.g. those from private hospitals. Typhoid fever affects the developing countries and its incidence usually decreases with increased development. In some of the more industrialized countries of North America and Europe and Japan, typhoid fever has declined significantly and now occurs primarily in travellers returning from endemic areas (2).

Typhoid fever is a type of enteric fever, an acute febrile illness caused by ingestion and invasion by Salmonella typhi via contaminated food or drink. Hence, the outbreak of S. typhi can usually be traced back to food or

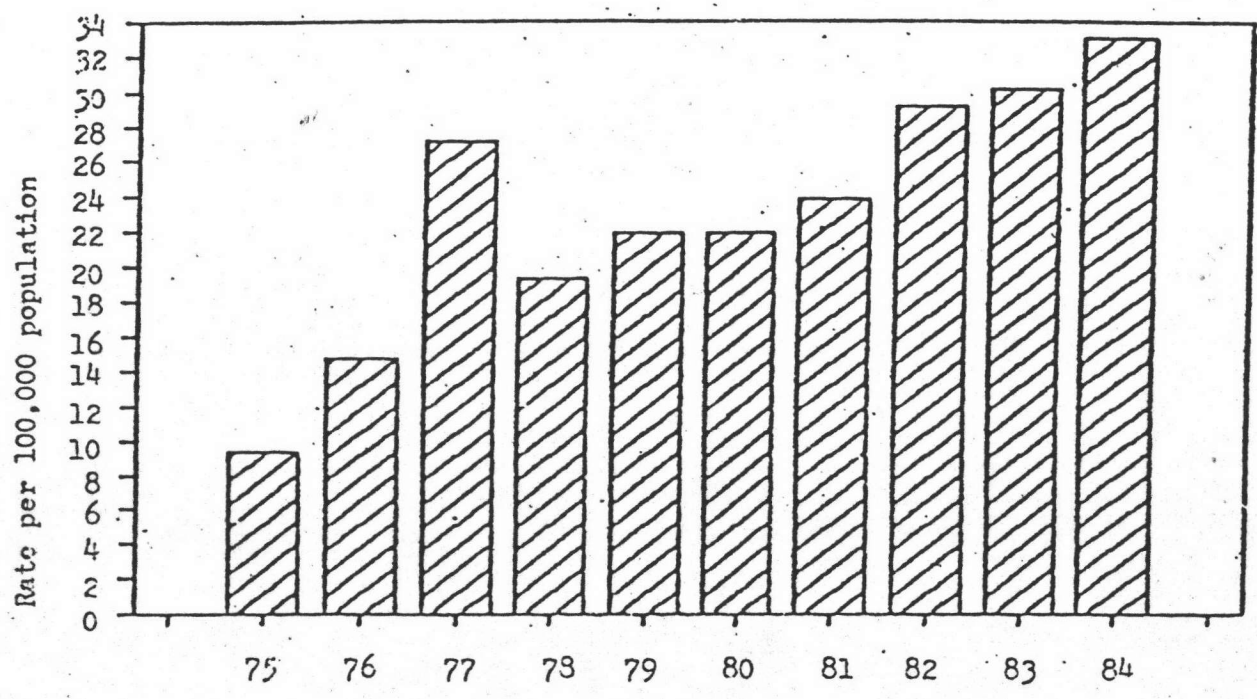


Figure 1 Reported cases of Enteric fever by year per 100,000 population., Thailand 1975-1984.
(From Epidemiological Surveillance Report Ministry of Public Health, Thailand, 1984)

drink that has been contaminated by other infected persons, who are excreting the organisms, usually in faeces. Occasionally, insects or flies have been implicated in carrying organisms from faeces to food or drink (3). The prevalence of typhoid fever in most areas of the world is caused by the lack of a sanitary water and sewage system, the presence of carriers in the population and the lack of vaccination to prevent the disease (4). The incidence of typhoid fever can be greatly diminished by an understanding and implementation of the above factors.

The prospects for adequate health practices and sanitation in all areas of the world, at least in the reasonably near future, are bleak. Consequently, because prevention of exposure is a difficult immediate goal, prevention by immunization becomes a rational alternative.

The purpose of this thesis is to present evidence for the status of immunity in humans for both humoral immune response (HIR) and cell-mediated immunity (CMIR) after two oral typhoid vaccination, Vivotif[®], the commercial product and our locally produced, Thai Red Cross vaccine. We used ELISA and leukocyte migration inhibition test for the measurement of specific IgA and systemic CMIR. We also introduced the enzyme urease, for use in the ELISA in order to compare it with alkaline phosphatase. Because of urease system is easily, therefor measured by eye and dose not need a spectrophotometer to detect the end point and because of

the overall stability of the system itself to be used in the field trials or in the private hospitals and clinics. However, we will first outline on basic understanding of typhoid fever and the various characteristics of the immune response that can be use to evaluate the efficacy of the vaccines available to date.