

Thesis Title Differences in Biochemical Characteristics,
 Serotypes and Kanagawa Phenomenon among
 Isolates of *Vibrio parahaemolyticus* from
 Individual Diarrheal Patients

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ABSTRACT

The study on differences in biochemical characteristics, serotypes and Kanagawa phenomenon among 10 isolates per specimen was carried out in 100 rectal swab specimens positive for *Vibrio parahaemolyticus* collected from diarrheal patients attending at Bamrasnaradura Infectious Diseases Hospital (BIDH) during August 1992 to February 1993. All one thousand isolates of *V. parahaemolyticus* were typable and found to be 37 O:K serotypes. The dominant serotype O3:K29 was found in the highest frequency (10.5%). In this study, all *V. parahaemolyticus* isolates of serotypes:- O2:K3, O3:K29 and O4:K4 had arabinose negative reaction and serotype O1:K1 was found in *V. parahaemolyticus* which gave indole negative reaction but produced thermostable direct hemolysin-related hemolysin (TRH⁺). Seventy-one percent of diarrheal cases had the same serotype of *V. parahaemolyticus* in all 10 isolates per individual case and 29% had 2 to 5 serotypes in 10 isolates per case in different ratios.

Diarrheal patients infected with *V. parahaemolyticus* showing the same positive indole reactions in all 10 isolates per case were found in 98%, arabinose in 61%, salicin in 3%, urease in 6%, and the growth in 8% NaCl in 79%. Those showing different ratios between positive and negative reaction in indole, arabinose, salicin, urease reactions and

the growth in 8% NaCl in 10 isolates per case were found 1%, 14%, 17%, 6%, and 20%, respectively. Eighty-four percent of diarrheal patients had *V. parahaemolyticus* with thermostable direct hemolysin gene (*tdh*⁺) in all 10 isolates per individual case, 4% had *tdh*⁺*trh*⁺ genes, and 1% had no hemolysin genes. Eleven percent had the variable ratios of hemolysin genes in 10 isolates per individual case. Similar results were found in those produced hemolysin. Seventy-two percent of diarrheal patients were infected with *V. parahaemolyticus* producing TDH (TDH⁺TRH⁻) in all 10 isolates per individual case, and 10% of those not producing any hemolysins (TDH⁻TRH⁻). Eighteen percent had variable ratios of hemolysin activity in 10 isolates per individual case.

A majority (87.6%, 876/1000) of urease negative *V. parahaemolyticus* isolates were found to possess *tdh*⁺ gene. *V. parahaemolyticus* urease positive isolates had both hemolysin genes in 5.6%, those had only *tdh* gene in 3.1% and *trh* gene in 0.5%. Similar results showed that 82.4% of *V. parahaemolyticus* urease negative isolates were found to produce only TDH⁺. Low percentage (1.5%) of urease positive *V. parahaemolyticus* isolates produced both hemolysins, followed by those produced only TDH in 0.8%, and TRH in 0.5%.

The number of isolates with the change in indole, arabinose, and urease reaction, and the presence and absence of *tdh*-gene before and after three successive subcultures were not significantly different (Z-test; P > 0.05), but the change in salicin reaction and Vp-TDH from positive to negative reaction after subculture were significantly different (Z-test; P < 0.05).