

ANNUAL PROGRESS REPORT

SEATO Medic Study No. 68 Quantitative Changes in Fecal Bacterial
Flora During Diarrheal Diseases

Project No. 3A 025601 A 811 Military Medical Research Program S. E. Asia

Task 01: Military Medical Research Program S. E. Asia

Subtask 01: Military Medical Research Program SEASIA
(Thailand)

Reporting Installation: US Army-SEATO Medical Research Laboratory,
APO 146, San Francisco, California

Division of Medical Research Laboratories
Department of Bacteriology and Immunology

Period Covered by Report: 3 February 1964 to 31 March 1964

Principal Investigator: Howard E. Noyes, Ph.D.

Associate Investigator: Dr. Chiraphun Duangmani

Assistants: Mrs. Tatsanee Occeno
Miss Poonsook Atthasampunna

Reports Control Symbol: MEDDH-288

Security Classification: UNCLASSIFIED

ABSTRACT

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The objective of this study was to carry out quantitative and qualitative bacteriologic studies on feces from diarrhea patients during the acute stage of the disease and during convalescence. The occurrence of acute diarrhea is known to be accompanied by qualitative changes in bowel flora. The assumption is that enteric pathogens gain ascendancy over the "normal" microflora of the bowel and by some mechanism(s) cause acute diarrhea. Controls will consist of patients hospitalized for non-diarrheal diseases. Only 10 specimens from 6 patients have been studied at this time and results are too fragmentary to permit evaluation.

BODY OF REPORT

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Objective: To quantitate the fecal flora of patients with or without acute diarrhea and to attempt to relate changes of bowel flora to the etiologic agent. In addition the influence of antimicrobial agents administered the patients should be reflected in the bacterial counts

Description: Fecal specimens are obtained from hospitalized patients. The time required for processing the specimens for anaerobic incubation is less than one hour and less than 2 hours for aerobic incubation. Serial dilutions and plate counts from 10^2 to 10^{10} are carried out on the media listed in Table I. In those instances when the same organism will grow on two different media, the media indicating the higher count is used. Routine procedures are utilized for final identifications of organisms.

TABLE I

Culture Used for Enumeration of Bowel Flora

Medium	Specific for:	Incubation Condition		
		Time (Hrs.)	Temp. C	Environment
Blood Agar	Total aerobes	24	37	aerobic
MacConkey Agar	Total gram-negative aerobes	24	37	aerobic
Mannitol Salt Agar	Staphylococci	24	37	aerobic
SF Agar	Fecal Streptococci	96	45	aerobic
Tellurite*	Vibrios	24	37	aerobic
Sabouraud Dextrose Agar	Yeasts	24	37	aerobic
Blood Agar	Total Anaerobes	48	37	anaerobic
Egg Yolk Azide Agar	Clostridia	48	37	anaerobic
Neomycin Blood Agar	Total gram-negative anaerobes	96	37	anaerobic
Lactobacillus	Lactobacilli	48	37	anaerobic

* Alkaline lauryl sulfate tellurite

Progress: The data in Table II are too meager to permit analysis. However, it can be observed that (1) yeasts, Escherichia coli, lactobacilli and Streptococcus fecalis were found in every specimen and (2) bacteroides, supposedly the predominant bacterial genus in feces, was not present in all instances. This study will be continued until enough specimens have been collected to permit analyses.

Summary: A study has been initiated to attempt to relate quantitative changes of bowel flora to diarrheas caused by different bacterial agents. The results presented are preliminary and are too few to permit analysis.

Conclusion: Information from this project should provide insight into the mechanisms by which acute diarrheas are initiated and into such related factors as re-establishment of normal bowel flora as a therapeutic objective.

General Information:

During the period covered by this report 413 water samples were submitted for bacteriologic analysis. Forty-four of 386 treated and 23 of 27 untreated water sources were considered unsafe for human consumption. Of 114 specimens of water taken from klongs in the Bangkok-Dhonburi area 122 non-agglutinating vibrios representing all 6 Heiberg groups were identified, but no agglutinating vibrios were found.

In support of various organizations and units, serologic or bacteriologic studies were carried out on the following:

Throats swabs	12
Urine specimens	10
Pus specimens	11
Blood cultures	31
Sputum	2
Cerebrospinal fluid	4
Serum	12
Autopsy specimens	17
Miscellaneous	13