PASSIVE HEMAGGLUTINATION TEST VERSUS THE CLASSIC TECHNIQUES USED IN DIAGNOSIS OF ENTERIC FEVER

THESIS

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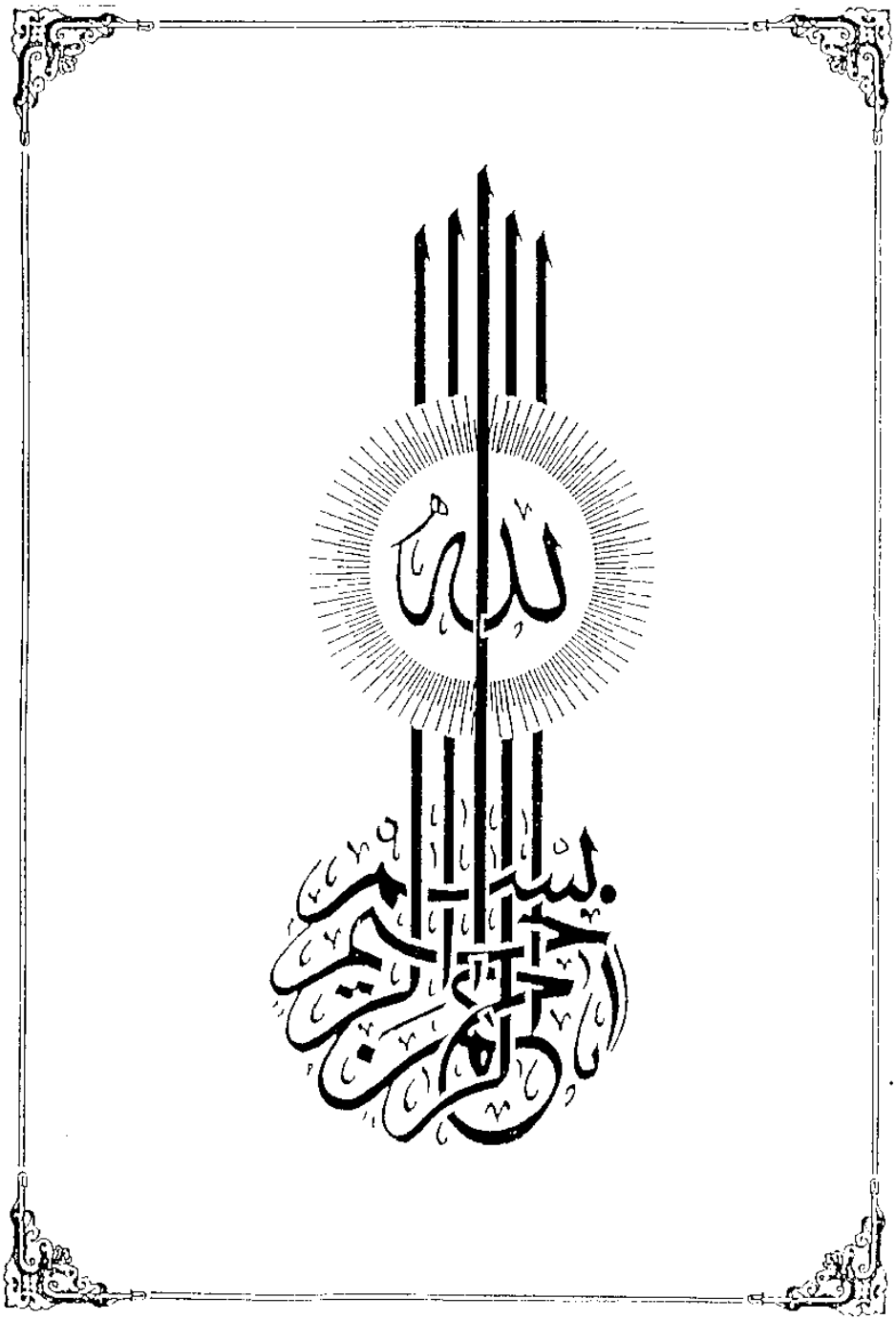

ABBREVIATIONS

AIDS:	Aquired ImmunoDeficiency Syndrome
AMS:	Automicrobic system
BCG:	Bacillus Camette Guerine
CSF:	Cerebrospinal fluid
COA:	Coagglutination test
C3:	Complement 3
CIE:	Counterimmunoelectrophoresis
DCA:	Desoxycholate citrate agar
Na_2HPO_4:	Disodium hydrogen phosphate
EPS:	Enteropathogen screen card
ELISA:	Enzyme-Linked Immunosorbent Assay
EDTA:	Ethylenediamine tetra acetic acid
FN:	False negative rate
FP:	False positive rate
H:	Flagellar
HE:	Hektoen enteric agar
H_2S:	Hydrogen sulphide
IFL:	Immunofluorescence technique
IgA:	Immunoglobulin A
IgG:	Immunoglobulin G
IgM:	Immunoglobulin M
LPS:	Lipopolysaccharide antigen
MA:	Microagglutination test
NBGL:	Novobiocine brilliant green glycerol lactose
PHA:	Passive hemagglutination technique
PBS:	Phosphate buffer saline
RIA:	Radioimmunoassay
RBCs:	Red blood cells
S:	Salmonella
SS:	Salmonella-Shigella agar

SGOT	Serum glutamate oxaloacetate transaminase
SGPT:	Serum glutamate pyurvate transaminase
NaCL:	Sodium chloride
NaH_2PO_4:	Sodium dihydrogen phosphate
SPS:	Sodium polyanetholsulfonate
O:	Somatic
TSI:	Triple sugar iron agar
TN:	True positive
TP:	True negative
TSB:	Trypticase soy broth
TAB:	Typhoid, paratyphoid A and B vaccine
Vi:	Virulence
BSA:	Wilson and Blair's Brilliant green bismuth sulphite agar
XLD:	Xylose lysine deoxycholate agar

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Introduction:

Human salmonellosis is a major public health problem and although mortality is low, the disease has important social and economic consequences ***(Ivanoff et al., 1994)***.

Between 1981 and 1986, the number of strains received for serotyping by the Public Health Laboratory Service (PHLS), Division of Enteric Pathogens has increased by 66%. This is predominantly due to strains of Salmonella typhimurium and Salmonella enteritidis ***(Humphrey et al., 1988)***.

Although most Salmonella infections are limited to the gastrointestinal tract, invasion of the blood stream and focal complications can occur ***(Blaser and Newman, 1982)***. Young infants are at particular risk for focal complications such as meningitis ***(Menon et al., 1994)***, bone and joint infection ***(Editorial, 1983)*** and foot abscess ***(Chagla et al., 1986)***.

Diagnostic tests for typhoid bacillus, such as Widal's test, are tube dilution tests which measure agglutinating antibodies against O and H antigens. The O or somatic antigens are prepared from the bacterial cell wall, the H or flagellar antigens from bacterial flagella, and the Vi or virulence antigen from a thermolabile structure surrounds the cell wall ***(Levine et al., 1978)***.

Salmonellae are divided into distinct serologic groups on the basis of O antigens, and further differentiated into more than 1,200 serotypes on the basis of H antigin. Group D comprises 78 Salmonella serotypes, all organisms in group D have O antigen 9, and 59 of the 78 serotypes also have O antigen 12. Antibodies to any group D salmonella will cross-react with other members of that group. The importance of this cross-reactivity is difficult to assess, since the frequency of antibody response to other Salmonella infections has been measured with the more sensitive enterobacterial hemagglutination technique rather than the standard agglutination methods used in Widal's reaction ***(Schroeder, 1969)***.

Serodiagnosis of enteric fever by the Widal test was once considered a useful alternative to hemoculture. But lately, it has been found unreliable ***(Reynold et al., 1970)***. Resulting in renewed effort to find improved methods for serodiagnosis such as passive hemagglutination (PHA) ***(Neter et al., 1965)***, counterimmunoelectrophoresis ***(Gupta and Rao, 1979)***, enzyme linked immunosorbent assay ***(Appassakij et al., 1987)*** and the radioimmunoassay ***(Tsang et al., 1981)***.

However, counterimmunoelectrophoresis, the enzyme-linked immunosorbent assay, and the radioimmunoassay are technically too complicated. So, passive hemagglutination test was simple, sensitive and specific serological test for diagnosis of enteric fever ***(Petchelai et al., 1987)***.

Aim of the Work:

To evaluate the passive hemagglutination test (PHA) by microtitration technique used for diagnosis of enteric fever in comparison to the classical methods used to diagnose such cases.

REVIEW OF LITERATURE