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THE ROLE OF HEAT-STABLE ENTEROTOXIN PRODUCED BY ESCHERICHIA COLI IN DIARRHEA OF INFANTS IN EGYPT

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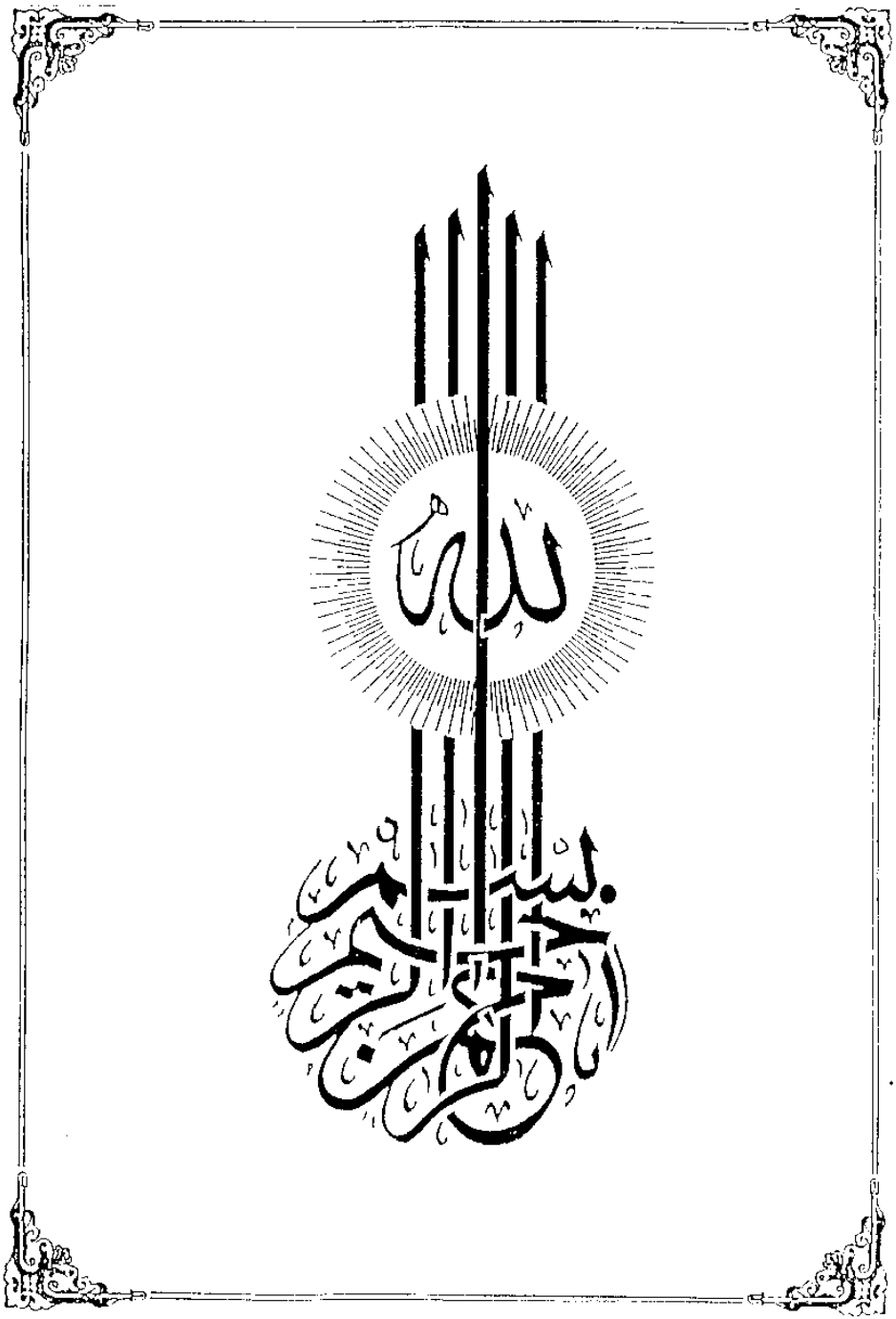

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INTRODUCTION

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In developing countries, diarrheal diseases,together with acute respiratory infection are the leading cause of infantile and childhood mortality. In Cairo at 1961, 60% of infant deaths were due to gastroentritis (Infant mortality rate was 151.2 per 1000 live births, while specific infant mortality rate from gastroentritis was 92.6 per 1000 live births), (Shawki, 1965).

Every year, up to 1000 million diarrheal episodes cause four to five million deaths. In careful community study, children have been found to spend about 2 months a year (i.e. 16% of the time) with diarrhea (Barua,1980).

Diarrhea and vomiting are common symptoms in infants and young children, but these symptoms may occur as a feature of many infectious disease.

With regard to the aetiological diagnosis, the position is not so clear. In many cases no bacterial or viral agent is isolated from the feces, even in acute outbreaks of the disease (Gordon et al 1964, Gurwith and William 1977 and Evans et al 1977-a).This probably means that laboratory techniques are not sensitive enough to detect the infective agents, but it may also means that no infective agent is

involved. It may be that some organisms not usually regarded as pathogenic, but not present at birth, may when it first colonizes the infant gut cause a temporary upset of the flora or lead to the production of toxic metabolites which irritate the bowel wall (Christie 1974).

Although Escherichia coli strains (E. coli) predominants among aerobic commensal organisms present in the baby gut, yet it stands now among the common agents producing diarrhea (Cook 1974, Gurwith and William 1977).

The pathogenicity of certain strains of E. coli attributed either to presence of certain surface antigen giving invasivness properties and causing dysentry like syndrom (Ogawa et al 1968)or to production of enterotoxins that cause fluid accumulation giving salmonella like enterites with no invasion or ulceration (Sakazaki et al 1967).

Enterotoxigenic strains of E. coli produce two known types of enterotoxin, one heat-labile toxin (LT), the other is heat-stable toxin (ST) (Smith and Halls 1967a-b, Gyles and Barnum 1969, Smith and Gyles 1970 a,b, and Gyles 1971). LT is partially identical to choleragenic toxin of Vibrio cholera and has the same mechanism of action. LT had given much attention and its role in diarrhea seems well established.

As regards the role of ST in diarrhea of infants the position was not so clear till recent studies showed that ST producing strains of E. coli were responsible for some cases and some outbreaks of diarrhea (Serafim et al 1977, Luke et al 1978 and Bl'aha et al 1978), and this was supported by the study done by Levine et al (1977) on volunteers which proved that strains of E. coli that produce ST are important in etiology of diarrheal disease.

The aim of this study is to determine the role of this heat stable enterotoxin produced by E. coli as a factor in infantile diarrhea in Egyptian rural area.