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ANTIGENIC IDENTITY OF CULTURE 193T-64 AND *E. COLI* 0136:K78(B22)

M. R. F. FERNANDES(1) and L. R. TRABULSI(2)

SUMMARY

By cross agglutination and absorption tests it was shown that culture 193T-64 is identical to *E. coli* 0136:K78(B22), described by SAKASAKI & NAMIOKA in Japan, in 1957. The results are discussed.

INTRODUCTION

In 1964 TRABULSI et al.[7] isolated from a patient with acute enteritis a strain of *E. coli* capable of producing experimental kerato-conjunctivitis in guinea-pigs, which in all aspects was identical to that caused by *Shigella* strains. It was also demonstrated that this isolate was antigenically different from the diverse serologic types of *Shigella* and from the others enteric organisms known to cause experimental kerato-conjunctivitis in the guinea-pig, at that time. For this reason and because it was not possible to determine whether or not it belonged to one of the O antigenic groups of the genus *Escherichia*, the isolate was designated "Culture 193T-64". Organisms identical to culture 193T-64 have subsequently been isolated with relative frequency from the feces of children and adults with diarrhea. Some of these patients presented clinical manifestations typical of bacillary dysentery.

Herein is presented evidence that culture 193T-64 is antigenically identical to *E. coli* serotype 0136:K78(B22) — described by SAKASAKI & NAMIOKA in Japan, in 1957[4].

MATERIAL AND METHODS

Cultures — culture 193-64 was isolated in 1964[7] and the stock strains of *E. coli* 01-0145 were brought by one of us from the Enteric Unit, Communicable Disease Center, Atlanta, Ga. All the strains have been kept in nutrient agar tubes sealed with parafinezed corks.

Anti-sera — *E. coli* 01 to 0145 grouping sera were kindly supplied by the Communicable Disease Center, Atlanta, Ga. OK and O sera for culture 193T-64 and *E. coli* 0136 were prepared according to EDWARDS & EWING[2]. The methods described by the same Authors were followed for the agglutination and absorption tests.

RESULTS

In preliminary agglutination tests using *E. coli* sera 01 to 0145, a heated suspension of culture 193T-64 was significantly agglutinated only by serum 0136. Similarly, when heated suspension of *E. coli* 01 to 0145 were tested, only the *E. coli* 0136 suspension was strongly agglutinated by 193T-64 serum.

Identity of the antigens — When tested in serial dilutions of O antiserum for *E. coli* 0136, the heated suspension of culture 193T-64 was agglutinated to the titre of the serum (1:10.240). Similarly, the heated suspension of *E. coli* 0136 was agglutinated to the titre of the 193T-64 O serum (1:10.240). In addition reciprocal absorption tests showed that the heated suspension of culture

(1) Fellowship of the "Fundação de Amparo à Pesquisa do Estado de São Paulo", Brasil
(2) Professor of Bacteriology (Departamento de Microbiologia e Imunologia da Faculdade de Medicina da Universidade de São Paulo, Brasil). Director: Prof. Carlos da Silva Lacaz

193T-64 removed all the agglutinins from 0136 serum and conversely the heated suspension of *E. coli* 0136 removed all agglutinins from the O serum for culture 193T-64 (Table I).

Further studies using OK sera and living suspensions of *E. coli* 0136 and culture 193T-64, as well as adequated controls to exclude O agglutination, showed that the living suspensions from both cultures were agglutinated to the titre of the heterologous serum (1:160) and that all K and O agglutinins from both sera were removed by the absorbing culture. Ancillary evidence that the K

TABLE I

Comparison of the O antigens of *E. coli* 0136 and culture 193T-64

	O Antisera			
	136		193T-64	
O antigen suspensions (100°C 1 hour)	Unabsorbed	Absorbed by culture 193T-64 (100°C 1 hour)	Unabsorbed	Absorbed by 0136 (100°C 1 hour)
0136	10.240	—	10.240	—
193T-64	10.240	—	10.240	—

TABLE II

Comparison of the K antigens of *E. coli* 0136 and culture 193T-64

	OK — antisera				
	0136:K78(B22)		193T-64		
Antigen Suspension	Unabsorbed	Absorbed by 193T-64 (living)	Unabsorbed	Absorbed by 0136 (living)	Absorbed by 193T-64 (100°C 1 hour)
E. coli 0136 (living)	160	—	160	—	—
E. coli 0136 (100°C 1 hour)	5.120	—	5.120	—	—
Culture 193T-64 (living)	160	—	160	—	—
Culture 193T-64 (100°C 1 hour)	5.120	—	5.120	—	—

antigen of culture 193T-64 was of the B variety was afforded by agglutinin absorption experiments in which OK antiserum 193T-64 was absorbed with a suspension of the homologous culture that had been heated at 100°C for one hour. Since both O and K agglutinins were removed from the antiserum by the heated suspension, it was clear that agglutinin binding power of the K antigen was not destroyed and hence, that the K antigen was of the B variety (Table II).

From the above results it may be concluded that both the O and K antigens of culture 193T-64 are identical to the O and K antigens of *E. coli* 0136:K78(B22).

DISCUSSION

It has been demonstrated that several *E. coli* strains share with *Shigella* serotypes the capacity of causing experimental kerato-conjunctivitis in the guinea-pig. Such *E. coli* strains have been found in O groups 25, 28, 32, 42, 124, 143 and 144 [1, 3, 5, 6, 8]. To these series now *E. coli* 0136:K78(B22) can be added.

Most of the *E. coli* cultures capable of causing experimental kerato-conjunctivitis in the guinea-pig have been found in association with cases of human enteritis. Similarly the six strains of *E. coli* 0136 studied by SAKASAKI & NAMIOKA were all isolated from patients with diarrhea and the feeding of one adult volunteer was followed by severe enteritis [4]. Data on the importance of this bacteria as a cause of enteritis in this country and on its experimental pathogenicity for man, will be presented in a further paper.

RESUMO

Identidade antigênica da cultura 193T-64 *e* E. coli 0136:K78(B22)

Por meio de provas de aglutinação e de absorção cruzadas, demonstrou-se que a cultura 193T-64 é idêntica à *E. coli* 0136:K78 (B22) — descrita por SAKASAKI & NAMIOKA, em 1957, no Japão. Os resultados são discutidos.

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