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INFECTIOUS RESISTANCE IN PATHOGENIC ENTERIC ORGANISMS ISOLATED IN SÃO PAULO, BRASIL

(PRELIMINARY REPORT)

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SUMMARY

Infectious resistance to drugs was looked for in 24 strains of pathogenic enteric organisms isolated in São Paulo, Brasil.

This kind of resistance was found in 23 of the 24 strains tested.

Since japanese workers showed in 1959 that multiple drug resistance in many strains of *Shigella* was infectious, i.e., it could be transfered by conjugation from resistant shigellas to sensitive strains of *E. coli*, this kind of resistance, in enteric bacteria, has been reported from several countries [1, 3, 4, 5].

In this note evidence is put forward indicating that infectious resistance is apparently very frequent among *Shigella*, *Salmonella* and enteropathogenic *Escherichia coli* strains isolated in São Paulo, Brasil.

Infectious resistance was looked for in 8 *Shigella flexneri*, 1 *Shigella sonnei*, 7 *Salmonella* sp and 8 *Escherichia coli* (0111 and 0119) strains, all of them isolated in São Paulo in the last years from patients with enteritis. As stated in Table I, these strains display a variable pattern of multiple resistance.

Transfer of resistance was made by the methods recomended by WATANABE [6]. *Escherichia coli* K12-J5, lactose fermenter, sensitive to low levels of oxytetracycline (OT), neomycin (N), chloramphenicol (C), streptomycin (S), hetacylin (H) and sulphadiazine (Su) was used as the recipient of the resistance factor from *Shigella* and *Salmonella* strains. *Escherichia coli* K12-712, lactose non-fermenter, resistant to 1,000 μg/ml of streptomycin and sensitive to the same low levels of the others antibiotics and sulphadiazine was used as the recipient of the resistance factor from the *E. coli* strains. Both strains were kindly supplied by N. DATTA, M. D. from the Postgraduate School of Medicine, London.

Resistance of the organisms was determined by the usual quantitative methods. Lab-Lemco Agar (Oxoid) containing hemolised horse blood was used for the determination of sulphadiazine resistance.

As shown in Table I, all of the 9 *Shigella* strains and 4 (85-65, 877B-66, 613B-67, 223J-66) out of the 7 *Salmonella* strains, have transfered the full set of resistance determinants to the recipient cultures. One *Salmonella* strain (C.I.I.-65) transfered resistance to C, OT and N, but failed to transfer resistance to S and Su; another one (749B-67) transfered resistance to C, OT and N, but not to S, H and Su; in one *Salmonella*, no transference at all was observed (797B-67).

In *E. coli* donors, comparable results were attained: full transference of resistance occurred in 4 strains (*E. coli* 0111, 703B-67 and 810B-67; *E. coli* 0119, 801B-67 and 880B-67); in one donor (*E. coli* 0111, 665B-67), resistance to OT, N and Su was transfered but not to C; in a second donor (*E. coli* 0111, 752B-67), transference

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TABLE I

Patterns of multiple resistance exhibited by donor and transfered to recipient strains

Donors strains	Patterns of resistance exhibited	Patterns of resistance transfered
Shigella flexneri		
335--63	S C OT N Su	S C OT N Su
312-62, L-62, 60-4 and 111-64	S C OT Su	S C OT Su
322-63, Lisa 63 and *Sh. sonnei*		
78-64	S OT Su	S OT Su
Salmonella sp.		
85-65	S C OT N H Su	S C OT N H Su
749B-67	S C OT N H Su	C OT N
797B-67	S C OT N H Su	—
877B-66, 613B-67, and 223J-66	S C OT N Su	S C OT N Su
C.I.I.-65	S C OT N Su	C OT N
E. coli 0111		
752B-67	C OT N H Su	C OT N Su
703B-67 and 810B-67	C OT N Su	C OT N Su
665B-67	C OT N Su	OT N Su
E. coli 0119		
835B-67 and 658B-67	C OT N H Su	C OT N H
801B-67 and 880B-67	C OT N Su	C OT N Su

of C. OT. N and Su resistance determinants, but not of H, occurred. Another two strains (*E. coli* 0119, 835B-67 and 868B-67) transfered C, OT, N, H, but not Su.

Thus, infectious resistance was demonstrated in 23 of the 24 strains tested. No transference of multiple resistance, or incomplete transfer of the determinants of resistance, may have several explanations and have been observed by others [2, 3]. In this survey some of the failures may be due to the simple test system used in our experiments. Nevertheless if our observations in the 23 strains studied are representative, infectious resistance is also very frequent in enteric pathogenes isolated in São Paulo, Brasil.

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