Summary of microbiological findings in healthy human

Materials and methods

- ✓ Fecal specimens were collected from healthy asymptomatic individuals, including farmers in Hanoi and Thai Binh, and marker sellers in Nha Trang.

- ✓ Sampling at Hanoi, Thai Binh and Nha Tran since 2013.

- ✓ Total collected sample numbers: more than 1500.

- ✓ CTX-M type ESBL-producing bacteria have been screened and characterized by following the protocol which had been established in this project.

- ✓ Collected fecal specimens were subjected to microbiological and molecular biological analysis, such as phylogenetic grouping, genotyping of antibiotic-resistant genes, antibiotic susceptibility test and PFGE.

# Prevalence of the CTX-M type ESBL-producing *E. coli* in healthy asymptomatic individuals in Vietnam.

Sites	ESBL-producing bacteria in healthy people	
	N	%
Hanoi [1]	1025	59.0%
Thai Binh [1]	397	65.0%
Nha Trang [1]	156	75.0%
Total	1578	62.1%
Thailand [2]	417	65.9%
Japan [3]	218	6.0%

1: Samples were collected from market seller in Nha Trang, from farmer in Hanoi and Thai Binh.
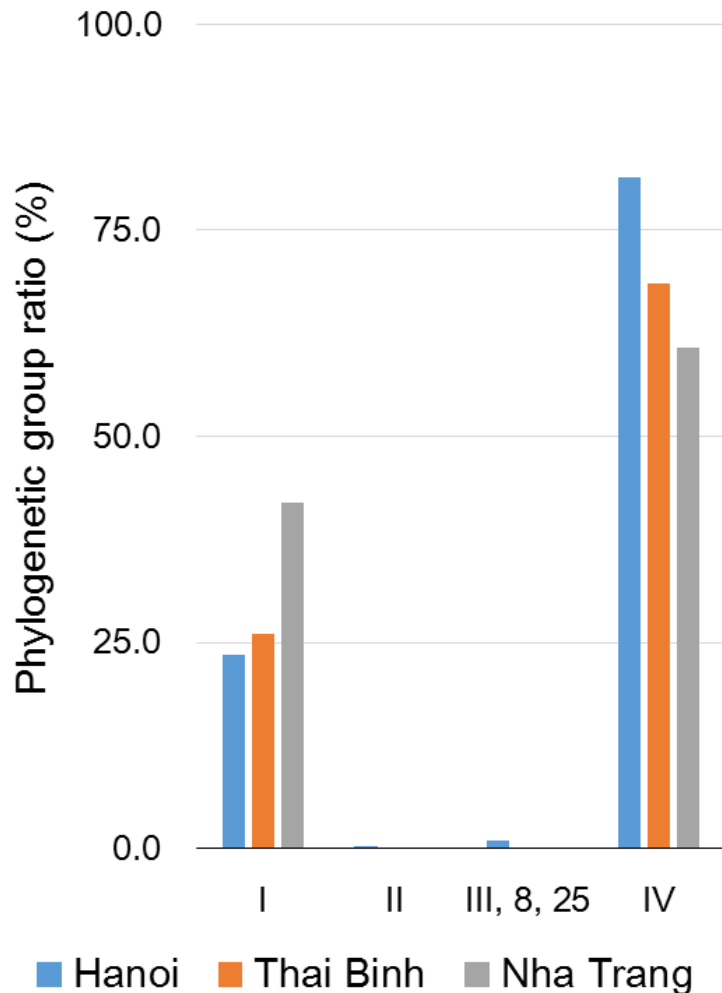2: Luvsansharav UO, et al., J Antimicrob Chemother. 2012;67(7):1769–1774.
3: Luvsansharav UO, et al., J Infect Chemother. 2011;17(5):722-725.

Phylogenetic group classification of the isolated CTX-M type ESBL-producing *E. coli*
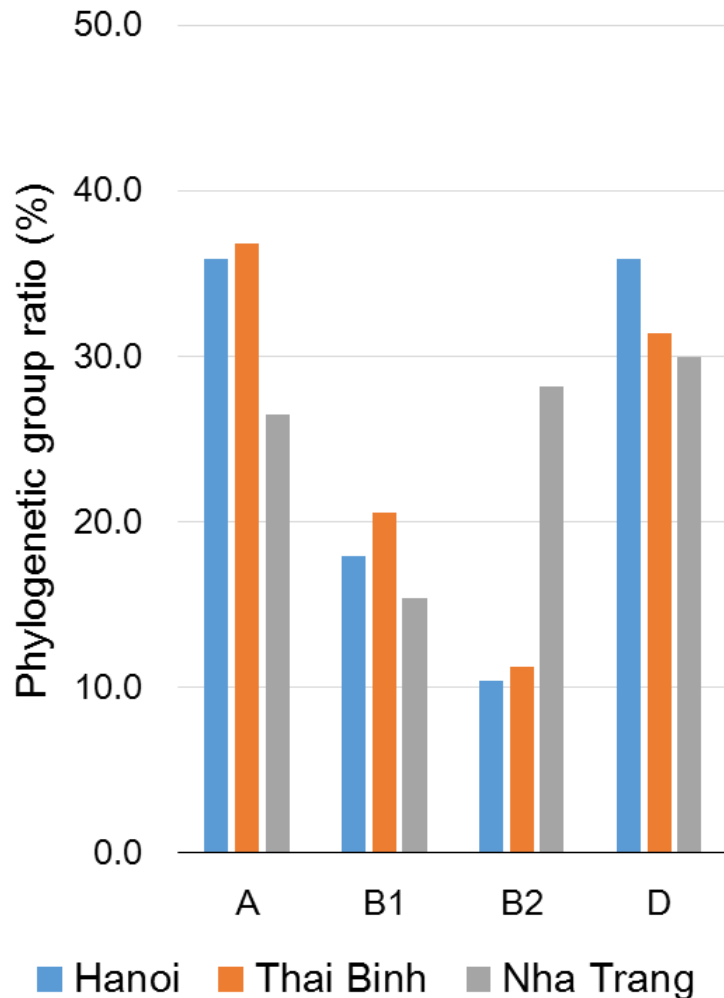
N	Hanoi	Thai Binh	Nha Trang
A	104	95	31
B1	52	53	18
B2	30	29	33
D	104	81	35
Total	290	258	117

Genotyping of the detected bla_{CTX-M}s in healthy human.

N	Hanoi	Thai Binh	Nha Trang
I	68	67	49
II	1	0	0
III, 8, 25	3	0	0
IV	236	177	71
Total	308	244	120

Clinical isolates and isolates from UTI patients

✓ 86 clinical isolates were collected in Nha Trang, and 36 isolates (41.9%) were ESBL-producing *E. coli*. Among them, 35 isolates were CTX-M type ESBL-producing *E. coli*.

✓ Until now, 14 CTX-M-I group genes (11 $bla_{CTX-M-15}$ and 3 $bla_{CTX-M-55}$) and 12 CTX-M-IV group genes (4 $bla_{CTX-M-14}$ and 8 $bla_{CTX-M-27}$) were confirmed.

✓ 12 ESBL-producing *E. coli* isolates were obtained from 50 UTI patients (24.0%) in Thai Binh.

✓ 6 CTX-M-I group genes (5 $bla_{CTX-M-15}$ and 1 $bla_{CTX-M-55}$) and 6 CTX-M-IV group genes (1 $bla_{CTX-M-14}$ and 5 $bla_{CTX-M-27}$) were detected.

PFGE analysis (Phylogenetic group B2)
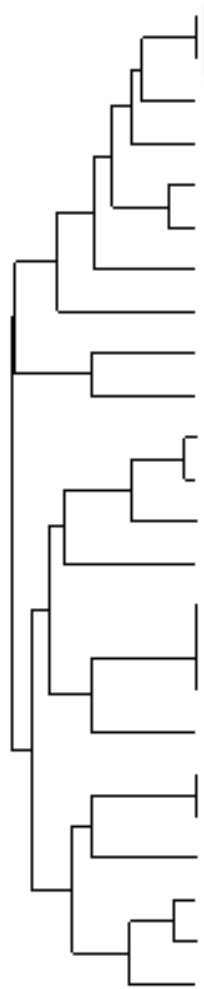
	:13TB074	13Aug31	Fish	Thong	B2	TEM	ESBL	cbx-m-9s	FIB,Frep
	:15TBU027	DK767(1)	UTI	T	B2	TEM	ESBL	CTX-M-27	FIB
	:14TB160	14Jun22	Shrimp	Lua	B2	none	ESBL	cbx-m-9s	FIB,Frep
	31.093_Dec13	31.093	human	T	B2	TEM	ESBL	CTX-M-27	FIB,Frep
	:19.060_Dec13	19.060	human	T	B2	TEM	ESBL	CTX-M-27	FIB,FIA,Frep
	22.067_Dec13	22.067	human	T	B2	TEM	ESBL	CTX-M-27	FIB,FIA,Frep
	:15TBU008	DK597(1)	UTI	T	B2	TEM	ESBL	CTX-M-15	FIA, FIB, I1
	44.132_Dec13	44.132	human	T	B2	T	ESBL	CTX-M-14	FIB,Frep
	:13TB019	13Jun15	Chicken	Thong	B2	none	ESBL	cbx-m-9s	FIB,HI2
	:15TBU020	DK999	UTI	T	B2	TEM	ESBL	CTX-M-15	FIB
	:15TBU023	DK851(1)	UTI	T	B2	TEM	ESBL	CTX-M-27,CMY-8b	A/C, FIA, FIB, Frep
	:15TBU025	DK866(1)	UTI	T	B2	TEM	ESBL,A	CTX-M-27,CMY-8b	A/C, FIA, FIB, Frep
	:15TBU032	DK702(1)	UTI	T	B2	0	ESBL	CTX-M-27	A/C, FIB
	:13TB056	13Aug18	Shrimp	Cau	B2	TEM	ESBL	cbx-m-9s	FIB,I1,HI1,N
	70.212_Dec13	70.212	human	T	B2	TEM	ESBL	CTX-M-14	FIB,FIA-like,Frep
	:16.046_Dec13	16.046	human	T	B2	TEM	ESBL	CTX-M-14	FIB,FIA-like,Frep
	:16.048_Dec13	16.048	human	T	B2	TEM	ESBL	CTX-M-14	FIB,FIA-like,Frep
	:14TB010	14Mar06	Chicken	Thong	B2	TEM	ESBL	cbx-m-9s	FIB,N,HI2
	:13TB007	13Jun06	Shrimp	Thong	B2	none	ESBL	cbx-m-9s	FIB,FIA,Frep
	:13TB011	13Jun07	Shrimp	Thong	B2	none	ESBL	none	FIB,FIA,Frep
	:13TB003	13Jun02	Pork	Thong	B2	none	ESBL	cbx-m-9s	FIB,FIA,Frep
	32.098_Dec13	32.098	human	T	B2	NONE	ESBL	CTX-M-27	FIB,FIA
	20.064_Dec13	20.064	human	T	B2	NONE	ESBL	CTX-M-27	FIB,FIA
	06.020_Dec13	06.020	human	%	B2	NONE	ESBL	CTX-M-27	FIB,FIA

Summary

✓ Prevalence of the CTX-M type ESBL-producing E. coli was high (62.1%) in Vietnamese healthy individuals.

✓ The CTX-M-type ESBL-producing E. coli was detected in clinical isolates (41.9%) and UTI patients urine samples (24.0%) with higher detection rate.

✓ PFGE analysis indicated similar ESBL-producing E. coli strain was detected in food item (fish) and UTI patient.

THANK YOU
FOR YOUR KIND ATTENTION