RES-314

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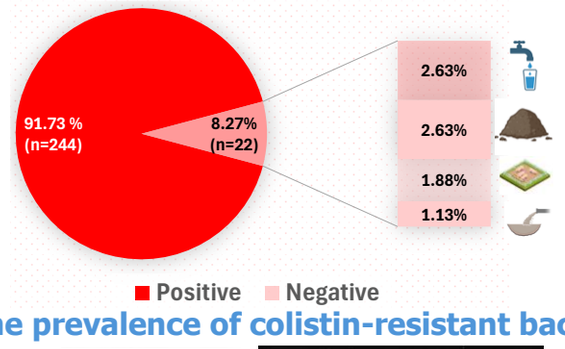
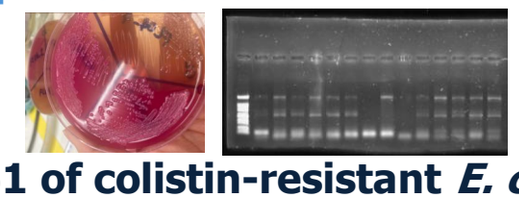
Colistin-Resistant *E. coli* in Pig Farms with Post-Colistin Ban in Songkhla Province, Thailand: A One-Health Surveillance Approach

Sanicha Chumtong[1], Rattanaruji Pomwised[2], Komwit Surachat[3] , Sarunyou Chusri[3,5], Arnon Chukamnerd[5], Ruttayaporn Ngasaman[6,*]

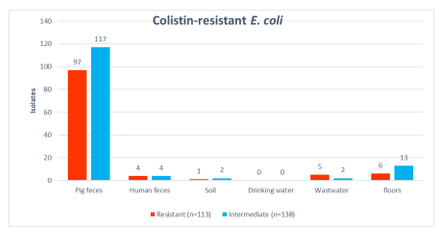
[1]Department of Biomedical Sciences and Biomedical Engineering, Faculty of Medicine, Prince of Songkla University, Songkhla 90110, Thailand; sanicha43620@gmail.com
[2]Division of Biological Science, Faculty of Science, Prince of Songkla University, Songkhla 90110, Thailand; rattanaruji.p@psu.ac.th
[3]Department of Biomedical Sciences and Biomedical Engineering, Faculty of Medicine, Prince of Songkla University, Songkhla 90110, Thailand; komwit.s@psu.ac.th
[5]Division of Infectious Diseases, Department of Internal Medicine, Faculty of Medicine, Prince of Songkla University, Songkhla 90110, Thailand; sarunyouchusri@hotmail.com
[6]Faculty of Veterinary Science, Prince of Songkla University, Songkhla 90110, Thailand; Ruttayaporn.n@gmail.com *Corresponding author; Tel: +66 (09) 1845 9518, +66 (0) 7428 9601; Fax: +66 (0) 7428 9608

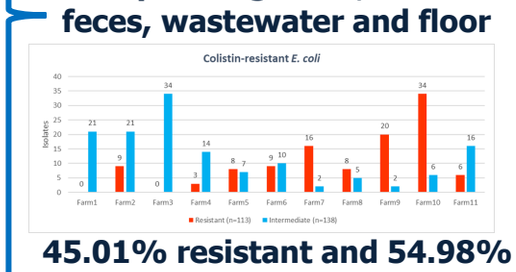
GRAPHICAL ABSTRACT





251 of colistin-resistant *E. coli* isolates





64 unique colistin-resistant *E. coli* isolates and MIC value showed only at 4 and 8 µg/ml.

		Pig feces	Human feces	Soil	Drinking water	Wastewater	floors	Total isolates	MIC value 4 ug/ml	MIC value 8 ug/ml
Na Mom	Farm1	0	0	0	0	0	0	0		
	Farm2	6	0	0	0	0	0	6	5	1
Singhanakhon	Farm3	0	0	0	0	0	0	0		
Hat Yai	Farm4	2	0	0	0	0	0	2	1	1
	Farm5	3	0	0	0	1	1	5		5
	Farm6	6	0	0	0	0	0	6	2	4
Ranot	Farm7	6	1	0	0	0	1	8	2	6
	Farm8	4	1	0	0	0	1	6	6	0
	Farm9	9	1	1	0	0	0	11	8	3
Thepha	Farm10	13	0	0	0	1	2	16	16	0
	Farm11	3	0	0	0	1	0	4	4	0
Total isolates		52	3	1	0	3	5	64	44	20
MIC value	4 ug/ml	35	2	1	0	2	4	44	68.7%	
	8 ug/ml	17	1	0	0	1	1	20		31.3%

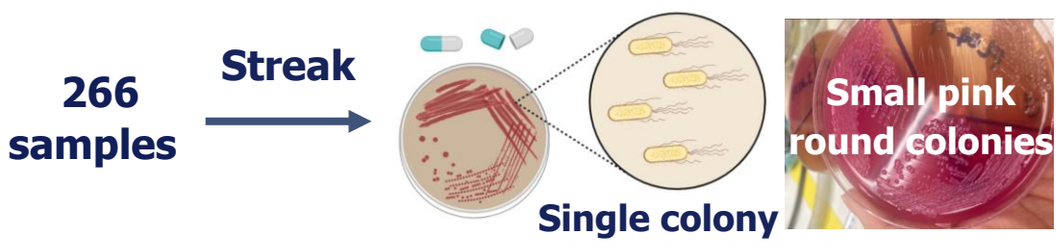
OBJECTIVES

To survey of colistin-resistant *E. coli* isolates from pigs, farmers and environments of pig farms in Songkhla province, Thailand

METHODOLOGY

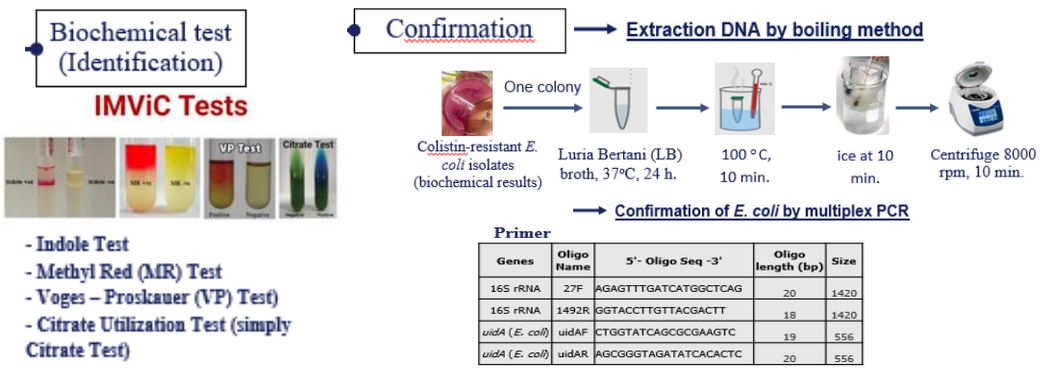
Sample collection

Screening of colistin-resistant *E. coli* isolates



MacConkey agar (MAC) + 4 ug/ ml of colistin (Intermediate), 37°C, 24 h.

Identification and confirmation of *E. coli*

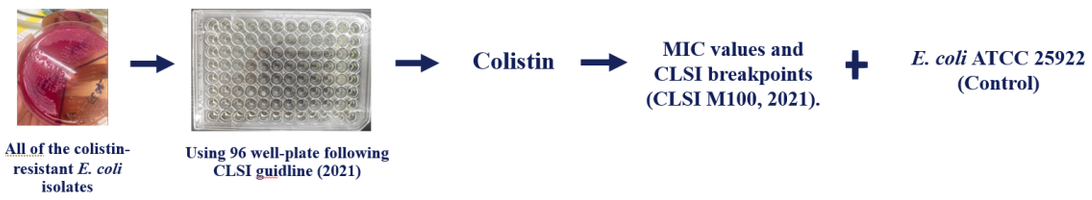


Primer

Genes	Oligo Name	5'- Oligo Seq -3'	Oligo length (bp)	Size
16S rRNA	27F	AGAGTTTGATCATGGCTCAG	20	1420
16S rRNA	1492R	GGTACCTTGTTACGACTT	18	1420
uidA (*E. coli*)	uidAF	CTGGTATCAGCGCGAAGTC	19	556
uidA (*E. coli*)	uidAR	AGCGGGTAGATATCACACTC	20	556

Antimicrobial susceptibility testing (AST) by broth microdilution method

Minimum inhibitory concentration (MIC) of broth microdilution method



RESULTS

The colistin-resistant bacteria were detected in approximately 91.73% (n= 244) of the samples. So, total of 22 samples tested negative for colistin resistance including pig drinking water samples (n = 7), wastewater samples (n = 3), soil samples (n = 7), and in floor swab samples (n = 5). The results indicated that 251 of colistin-resistant *E. coli* isolates.

RESULTS (continued)

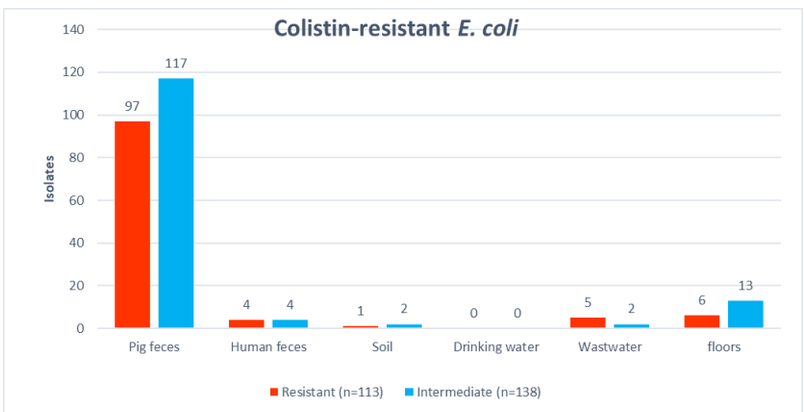


Fig.1 Distribution of colistin-resistant *E. coli* isolates from different samples source

- **45.01% resistant (113)**
- **54.98% intermediate susceptibility (138)**
- **Pig feces, human feces, wastewater & floor**
- **Farm 10, 9, 7, 6, 2, 5, 8, 11 & 4**

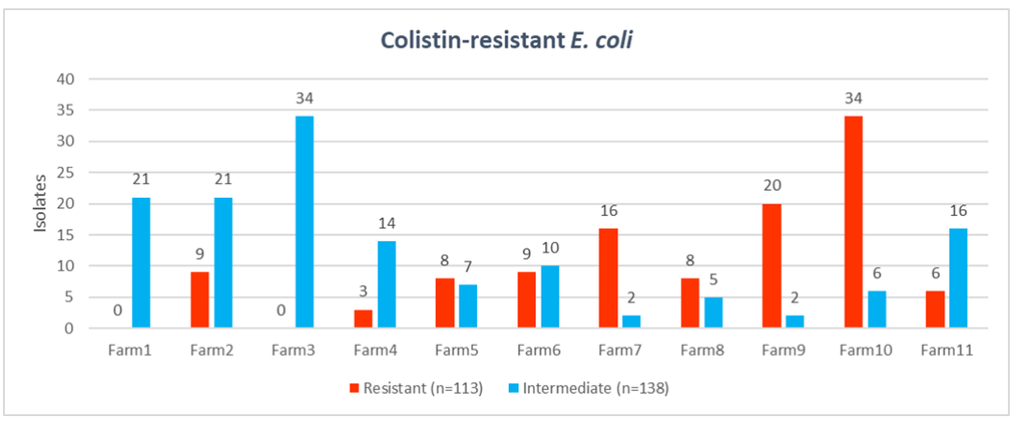


Fig.2 Distribution of colistin-resistant *E. coli* isolates among 11 different private pig farms

- **MIC value at 4 ug/ml (68.7%) and 8 ug/ml (31.3%)**
- **HatYai, Ranod & NaMom**
- **Pig feces, floors, Human feces, wastewater & soil**

Fig.3 Distribution of 64 unique colistin-resistant *E. coli* isolates and MIC values from various sources.

		Pig feces	Human feces	Soil	Drinking water	Wastewater	floors	Total isolates	MIC value 4 ug/ml	MIC value 8 ug/ml
Na Mom	Farm1	0	0	0	0	0	0	0		
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	Farm6	6	0	0	0	0	0	6	2	4
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	Farm8	4	1	0	0	0	1	6	6	0
	Farm9	9	1	1	0	0	0	11	8	3
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DISCUSSION AND CONCLUSION

Previous studies in Thailand also reported *mcr*-positive *E. coli* from pigs and wastewater (1), with resistance rates of 41% in healthy and 73% in sick pigs (2). These findings underscore the need for continuous monitoring, responsible antibiotic use, and the One Health approach to effectively control antimicrobial resistance in agricultural environments.

REFFENCES

1. Khine NO, Lugsomya K, Niyomtham W, Pongpan T, Hampson DJ, Prapasarakul N. Longitudinal monitoring reveals persistence of colistin-resistant *Escherichia coli* on a pig farm following cessation of colistin use. Frontiers in Veterinary Science. 2022;9:845746.
2. Trongjit S, Assavacheep P, Samngamnim S, My TH, An VTT, Simjee S, et al. Plasmid-mediated colistin resistance and ESBL production in Escherichia coli from clinically healthy and sick pigs. Scientific Reports. 2022;12(1):2466