

**Table S1:** Completed PRISMA 2020 checklist¹**PRISMA 2020 Checklist**

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	1
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	2
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	13-14
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	14
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	14, Table S3
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	14
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	14
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	14-15
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	14-15
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	15
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	NA
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	13-14
	13b	Describe any methods required to prepare the data for presentation or	14

Section and Topic	Item #	Checklist item	Location where item is reported
		synthesis, such as handling of missing summary statistics, or data conversions.	
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	15
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	15
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	15
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	15
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	15
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	15
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	2-3, Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	2-3
Study characteristics	17	Cite each included study and present its characteristics.	3-4
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Figure 2C, 2D, S1 & S2
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	3-6 & Table 2
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	9, Figure 2C, 2D, S1 & S2
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	4-8 & Figure 2
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Figure 2
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	Table 1
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Figure S1
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Table 2 & Figure 2
DISCUSSION			

Section and Topic	Item #	Checklist item	Location where item is reported
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	11-12
	23b	Discuss any limitations of the evidence included in the review.	13
	23c	Discuss any limitations of the review processes used.	13
	23d	Discuss implications of the results for practice, policy, and future research.	13
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	13
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	13
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	13-14
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	16
Competing interests	26	Declare any competing interests of review authors.	16
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	16

¹The PRISMA checklist was retrieved from Page et al.,2021.

For more information, visit: <http://www.prisma-statement.org/>

Table S2: Search algorithms and example of key terms used for identification of relevant publications in *V. parahaemolyticus*

Search algorithm	Example
Bacteria	<i>Vibrio parahaemolyticus</i> ; <i>V. parahaemolyticus</i>
Target animal	Shrimp
Antimicrobial resistance	Antimicrobial resistance; AMR; antibiotic resistance; antimicrobial susceptibility test; resistance profile
Virulence factor	Virulence, TDH, TRH, pathogenicity
Bacteria * target animal	<i>Vibrio parahaemolyticus</i> (<i>V. parahaemolyticus</i>) * shrimp
Bacteria * virulence factor	<i>V. parahaemolyticus</i> * virulence; <i>V. parahaemolyticus</i> * TDH; <i>V. parahaemolyticus</i> * TRH; <i>V. parahaemolyticus</i> * pathogenicity
Bacteria * target animal * antimicrobial resistance	<i>V. parahaemolyticus</i> * shrimp * antimicrobial resistance; <i>V. parahaemolyticus</i> * shrimp * AMR; <i>V. parahaemolyticus</i> * shrimp * antibiotic resistance; <i>V. parahaemolyticus</i> * shrimp * antimicrobial susceptibility test; <i>V. parahaemolyticus</i> * shrimp * antimicrobial susceptibility testing; <i>V. parahaemolyticus</i> * shrimp * resistance profile

Table S3: AMR and their determinants of *V. parahaemolyticus* isolated from shrimp among relevant studies (n = 32)

ID	Author and published year	Country	AST	Antimicrobial class	Antimicrobial	Prevalence (%)
1	Mulya et al. (2022)	Indonesia	Disc diffusion (CLSI 2016)	Beta-lactams Phenicols Quinolones Tetracyclines	Ampicillin Chloramphenicol Ciprofloxacin Enrofloxacin Tetracycline	100.0 0 0 0 41.7
2	Dang et al. (2022)	Vietnam	Disc diffusion (CLSI M100-S24, CLSI, 2014) and broth macro dilution (NCCLS)	Aminoglycosides Beta-lactams Cephalosporins Folate pathway inhibitor/sulfonamides Macrolides Tetracyclines	Gentamicin Kanamycin Neomycin Amoxicillin Cephalexin Sulfadiazine Erythromycin Doxycycline Oxytetracycline	46.6 34.5 39.7 100.0 100.0 94.8 88.0 3.5 36.2
3	Nadella et al (2022)	India	Disc diffusion (CLSI, 2020)	Folate pathway inhibitor/sulfonamides Macrolides Phenicol Quinolones Tetracyclines	Tri-sulfa Erythromycin Chloramphenicol Ciprofloxacin Oxytetracycline	75.0 70.0 40.0 70.0 95.0
4	Babu et al. (2021)	India	Disc diffusion	NA	NA	NA
5	Vu et al. (2022)	Vietnam	Disc diffusion (CLSI, 2015)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Phenicol Quinolones Tetracyclines	Gentamicin Ampicillin Imipenem Cefotaxime Cefoxitin Ceftazidime Tri-sulfa Chloramphenicol Ciprofloxacin Tetracycline	0 80.8 0 11.5 0 11.5 7.7 0 0 3.9

6	Haifa-Haryani et al. (2022)	Malaysia	Disc Diffusion (CLSI, M45-A2)	Aminoglycosides Beta-lactams Cephalosporins Folate pathway inhibitor/sulfonamides Glycopeptides Macrolides Nitrofurans Phenicol Quinolones Tetracyclines	Gentamicin Kanamycin Ampicillin Penicillin Cefepime Cefotaxime Ceftazidime Cephalothin Sulfamethoxazole Vancomycin Erythromycin Nitrofurantoin Chloramphenicol Ciprofloxacin Norfloxacin Tetracycline	7.3 40.3 84.7 96.8 1.6 73.4 24.2 86.3 13.7 96.8 19.4 53.2 8.9 5.7 0.8 0.8
7	Kim et al. (2021)	Korea	Broth micro dilution Sensititre® (CLSI, 2016; EUCAST, 2019)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Macrolides Phenicol Polymyxins Quinolones Tetracyclines	Amikacin Gentamicin Streptomycin Ampicillin Imipenem Cefotaxime Cefoxitin Ceftazidime Ceftriaxone Tri-sulfa Azithromycin Chloramphenicol Colistin Ciprofloxacin Nalidixic acid Tetracycline	4.2 0 91.7 100.0 0 0 0 4.2 2.1 6.3 0 0 100.0 0 0 6.3
8	Mok et al. (2021)	Korea	Broth micro dilution Sensititre®	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Phenicols Polymyxins Quinolones Tetracyclines	Gentamicin Streptomycin Amox/cla Ampicillin Meropenem Cefepime Cefoxitin Ceftazidime Ceftiofur Tri-sulfa Chloramphenicol Colistin Ciprofloxacin Nalidixic acid Tetracycline	0 3.4 2.3 11.2 0 0 0 0 0 0 0 82.0 0 0 0

9	Jin et al. (2021)	China	Broth micro-dilution (CLSI, 2019)	Aminoglycosides Beta-lactams Cephalosporins Phenicol Quinolones	Kanamycin Amox/cla Ampicillin Cefazolin Cefuroxime Chloramphenicol Ciprofloxacin Nalidixic acid Norfloxacin	1.4 91.9 94.6 1.4 6.8 98.7 2.7 4.1 0
10	Siddique et al. (2021)	Bangladesh	Broth micro-dilution (CLSI, 2019)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Quinolones Tetracyclines	Gentamicin Streptomycin Amoxicillin Ampicillin Piper/tazo Imipenem Meropenem Cefixime Cefotaxime Cefoxitin Ceftriaxone Tri-sulfa Ciprofloxacin Nalidixic acid Tetracycline	11.8 5.9 94.1 94.1 0 0 0 0 29.4 17.7 0 0 0
11	Álvarez-Contreras et al. (2021)	Mexico	Micro dilution (CLSI, 2012; EP17-A2)	Aminoglycosides Beta-lactams Cephalosporins Folate pathway inhibitor/sulfonamides Nitrofurans Phenolics Quinolones	Amikacin Gentamicin Netilmicin Ampicillin Carbenicillin Cefotaxime Cephalothin Ceftriaxone Tri-sulfa Nitrofurantoin Chloramphenicol Pefloxacin	41.3 21.7 52.2 100.0 28.3 78.3 100.0 13.0 8.7 21.7 0 10.9
12	Janecko et al (2021)	UK	NA	NA	NA	NA
13	Venggadasamy et al. (2021)	Malaysia	Disk diffusion (CLSI, 2016)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Phenolics	Amikacin Gentamicin Kanamycin Ampicillin Ampi/sul Imipenem Cefotaxime Ceftazidime Tri-sulfa Chloramphenicol	2.3 4.7 9.3 95.4 81.4 23.3 37.2 7.0 0 0

				Quinolones Tetracyclines	Levofloxacin Nalidixic acid Oxytetracycline Tetracycline	2.3 2.3 16.3 18.6
14	Yasin et al. (2021)	Bangladesh	Disk diffusion (CLSI, 2013)	Aminoglycosides Beta-lactams Cephalosporins Folate pathway inhibitor/sulfonamides Macrolides Phenicols Quinolones Tetracyclines	Gentamicin Ampicillin Penicillin Ceftazidime Ceftriaxone Trimethoprim Tri-sulfa Azithromycin Erythromycin Chloramphenicol Ciprofloxacin Tetracycline	100.0 0 100.0 0 0 0 100.0 0 0 0 0 0 100.0
15	Nguyen et al. (2020)	Vietnam	Disk-diffusion method (CLSI, 2018)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate pathway inhibitor/sulfonamides Phenicols Quinolones Tetracyclines	Amikacin Gentamicin Amox/cla Ampicillin Imipenem Cefotaxime Ceftazidime Tri-sulfa Chloramphenicol Ciprofloxacin Ofloxacin Tetracycline	1.6 0 9.4 100.0 3.1 31.3 15.6 26.6 1.6 11.0 9.4 10.9
16	Navaneeth et al. (2020)	India	Disk-diffusion method	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Phenicols Quinolones Tetracyclines	Amikacin Gentamicin Amox/clav Amp/sul Ticarcillin Meropenem Cefotaxime Cephalothin Chloramphenicol Ciprofloxacin Levofloxacin Nalidixic acid Norfloxacin Ofloxacin Minocycline Tetracycline	0 0 40.0 2.9 4.8 0 9.5 0 1.9 1.9 1.9 0 0 2.9 1.9 100.0
17	Jiang et al. (2020)	China	Disk-diffusion method (CLSI, 2017)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins	Streptomycin Ampicillin Imipenem Cefamandole Cefazolin Cefepime Ceftizoxime	74.4 76.7 0 18.9 25.6 3.33 4.44

				Folate pathway inhibitor/sulfonamides Nitrofurans Phenicol Polymyxins Quinolones Tetracyclines	Sulfisoxazole Tri-sulfa Nitrofurantoin Chloramphenicol Florfenicol Polymyxin B Ciprofloxacin Enrofloxacin Norfloxacin Doxycycline Tetracycline	47.8 64.4 0 57.8 53.3 0 0 47.8 0 46.7 57.8
18	Beshiru et al. (2020)	Nigeria	Disk-diffusion method	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate-pathway inhibitor/sulfonamides Macrolides Phenicols Polymyxins Quinolones Tetracyclines	Gentamicin Kanamycin Streptomycin Tobramycin Amoxicillin Amox-clav Ampicillin Amp/sul Penicillin Imipenem Meropenem Cefotaxime Cephalothin Sulfamethoxazole Trimethoprim Erythromycin Chloramphenicol Colistin Polymyxin B Ciprofloxacin Ofloxacin Doxycycline Oxytetracycline Tetracycline	0 4.4 23.9 0 82.6 23.9 6.5 23.9 87.0 13.0 17.4 30.4 17.4 32.6 41.3 15.2 21.7 0 4.4 15.2 19.6 41.3 37.0 28.3
19	Rahman et al. (2020)	Bangladesh	Disk-diffusion method	Aminoglycosides Beta-lactams Folate-pathway inhibitor/sulfonamides Macrolides Nitrofurans Phenicols Polymyxins Quinolones Tetracyclines	Gentamicin Kanamycin Amoxicillin Ampicillin Sulfamethoxazole Azithromycin Erythromycin Nitrofurantoin Chloramphenicol Polymyxin B Ciprofloxacin Tetracycline	0 0 75.0 56.3 0 0 6.3 0 0 31.3 0 0
20	Li et al. (2020)	China	Disk-diffusion method (CLSI, 2018)	Aminoglycosides	Gentamicin Kanamycin Streptomycin	20.8 44.6 65.8

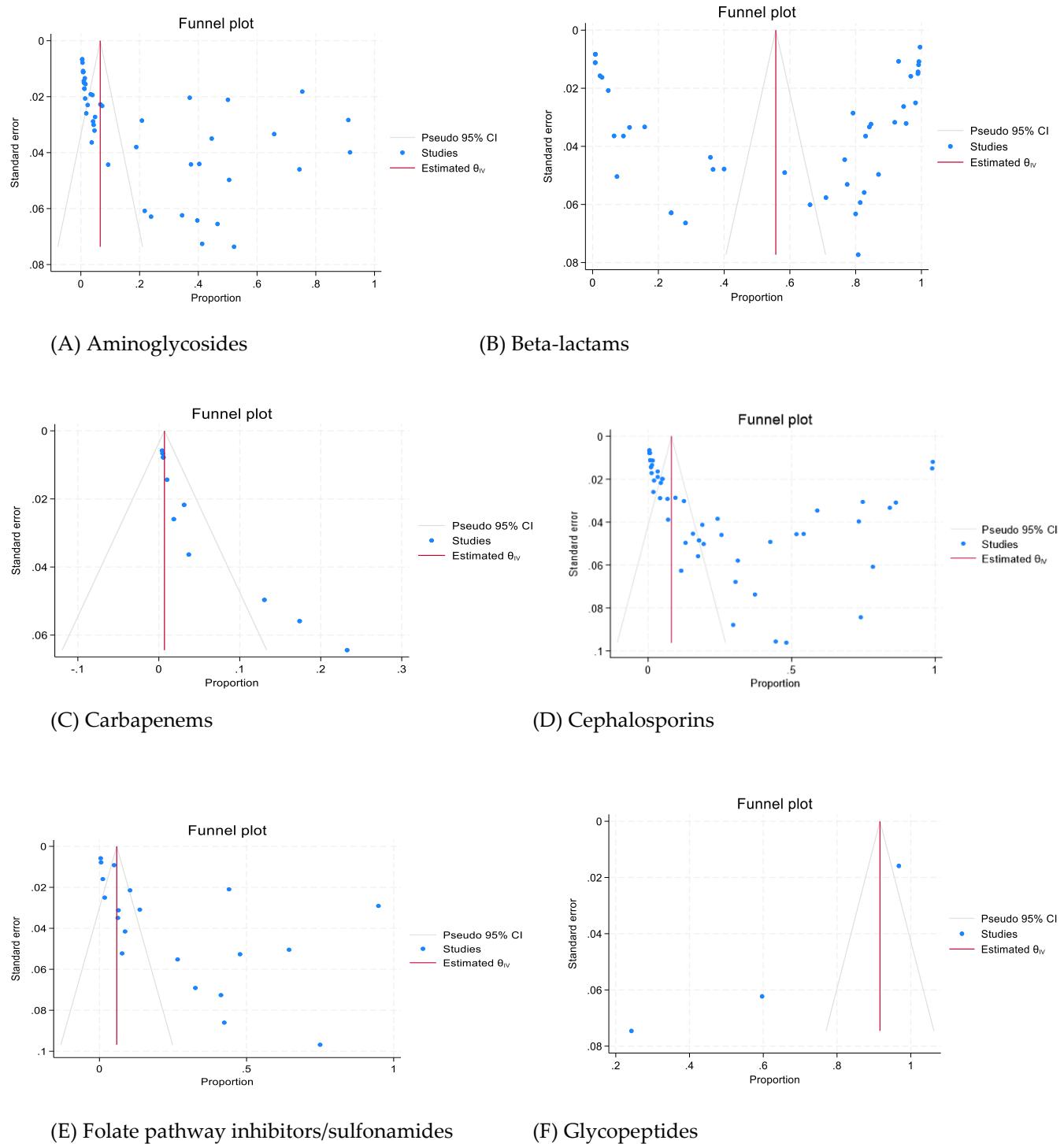
				Beta-lactams Cephalosporins Folate-pathway inhibitor/sulfonamides Macrolides Phenolics Quinolones Tetracyclines	Ampicillin Cefazolin Cephalothin Tri-sulfa Azithromycin Chloramphenicol Ciprofloxacin Nalidixic acid Tetracycline	79.2 58.9 74.8 10.4 12.9 4.0 3.5 2.5 14.4
21	Zangoei-Fard et al. (2020)	Iran	Disk-diffusion method (CLSI, 2010)	Aminoglycosides Beta-lactams Cephalosporins Folate-pathway inhibitor/sulfonamides Macrolides Quinolones Tetracyclines	Gentamicin Streptomycin Vancomycin Ampicillin Penicillin Cefotaxime Cephalothin Tri-sulfa Azithromycin Erythromycin Ciprofloxacin Nalidixic acid Tetracycline	68.4 42.1 36.8 57.9 47.4 31.6 36.8 36.8 26.3 47.4 21.1 21.1 52.6
22	Hu et al. (2020)	China	Disk-diffusion method (CLSI, 2015)	Aminoglycosides Beta-lactams Cephalosporins Folate-pathway inhibitor/sulfonamides Glycopeptides Lincosamide Macrolides Oxazolidines Phenolics Polymyxins Quinolones	Amikacin Gentamicin Kanamycin Neomycin Ampicillin Carboxybenzicillin Oxacillin Penicillin Piperacillin Cefazolin Cefoperazone Cefradine Ceftazidime Ceftriaxone Cefuroxime Cephalexin Tri-sulfa Vancomycin Clindamycin Erythromycin Medemycin Furazolidone Chloramphenicol Polymyxin Ciprofloxacin Norfloxacin	0 4.8 0 0 66.1 0 71.0 77.4 0 0 0 0 0 17.7 0 0 19.4 17.7 6.5 59.7 8.1 0 0 0 0 11.3 0 0 0 0

				Tetracyclines	Ofloxacin Doxycycline Minocycline Tetracycline	0 8.1 0 6.5
23	Lu et al. (2020)	NA	NA	NA	NA	NA
24	Bughe et al. (2020)	Cameroon	Disk-diffusion method (CLSI, 2016)	Aminoglycosides Beta-lactams Cephalosporins Phenicols Quinolones	Netilmicin Streptomycin Penicillin Ceftazidime Chloramphenicol Ciprofloxacin Norfloxacin	0 0 80.0 0 0 0 0
25	Tan et al. (2020)	Malaysia	Disk-diffusion method (CLSI, 2010)	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate-pathway inhibitor/sulfonamides Phenicols Quinolones Tetracyclines	Amikacin Gentamicin Amox/cla Ampicillin Amp/sul Penicillin Piperacillin Piper/tazo Imipenem Meropenem Cefazolin Cefepime Cefotaxime Cefoxitin Ceftazidime Cefuroxime Cephalothin Tri-sulfa Chloramphenicol Ciprofloxacin Levofloxacin Ofloxacin Doxycycline Tetracycline	37.5 6.7 0.8 84.2 0.8 100.0 35.8 15.8 0 0 84.2 3.3 5.0 12.5 5.0 51.7 54.2 0 0 13.3 1.7 2.5 0 0
26	Hong et al. (2020)	Vietnam	Disk-diffusion method (CLSI, 2014)	Aminoglycosides Beta-lactams Carbapenems Phenicols Polymyxins Quinolones Tetracyclines	Gentamicin Kanamycin Streptomycin Ampicillin Tebipenem Chloramphenicol Colistin Nalidixic acid Ofloxacin Oxytetracycline	0 0 91.7 91.7 0 0 91.7 8.3 0 25.0
27	Tengfei et al. (2020)	China	Disc diffusion method (CLSI, 2018)	Aminoglycosides Beta-lactams	Gentamicin Kanamycin Streptomycin Ampicillin	4.0 50.5 91.1 58.4

				Cephalosporins Macrolides Quinolones Tetracyclines	Piperacillin Cephazolin Azithromycin Erythromycin Ciprofloxacin Nalidixic acid Minocycline Tetracycline	36.6 42.6 7.9 4.0 5.0 4.0 3.0 4.0
28	Lei et al. (2020)	China	Broth micro-dilution method	Aminoglycosides Beta-lactams Cephalosporins Phenicols Quinolones Tetracyclines	Gentamicin Ampicillin Cefotaxime Ceftazidime Chloramphenicol Ciprofloxacin Levofloxacin Tetracycline	18.9 83.0 0 0 4.7 4.7 4.7 15.1
29	Amin et al. (2020)	Bangladesh	Disc diffusion method	Aminoglycosides Folate-pathway inhibitor/sulfonamides Glycopeptides Macrolides Phenicols Quinolones	Streptomycin Tri-sulfa Novobiocin Azithromycin Chloramphenicol Ciprofloxacin	0 42.4 24.2 30.3 0 0
30	Narayanan et al. (2020)	India	Disc diffusion method	Aminoglycosides Beta-lactams Carbapenems Cephalosporins Folate-pathway inhibitor/sulfonamides Phenicols Quinolones Tetracyclines	Gentamicin Amox/cla Ampicillin Meropenem Cefepime Cefotaxime Cefoxitin Ceftazidime Tri-sulfa Chloramphenicol Ciprofloxacin Tetracycline	3.7 7.4 100.0 3.7 44.4 74.1 48.1 29.6 0 0 3.7 0
31	Amatul-Samahah et al. (2020)	Malaysia	Disk-diffusion method (CLSI, 2015)	Aminoglycosides Beta-lactams Cephalosporins Glycopeptides Macrolides Phenicols Polymyxins Quinolones Tetracyclines	Gentamicin Kanamycin Streptomycin Ampicillin Cefepime Ceftriaxone Cephalothin Vancomycin Erythromycin Chloramphenicol Bacitracin Ciprofloxacin Tetracycline	0 0 0 50.0 0 0 0 100.0 0 0 100.0 0 0

32	Su et al. (2020)	China	Disk-diffusion method (CLSI, 2012)	Aminocyclitol Aminoglycosides Beta-lactams Folate-pathway inhibitor/sulfonamides Phenicols Rifamycins Tetracyclines	Spectinomycin Gentamicin Kanamycin Streptomycin Ampicillin Trimethoprim Tri-sulfa Chloramphenicol Rifampicin Tetracycline	44.6 37.1 50.1 75.4 93.0 44.0 5.0 0.5 82.9 24.1
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Amox/cla: Amoxicillin/clavulanic acid; Ampi/sul: Ampicillin-sulbactam; Piper/tazo: Piperacillin-tazobactam;
Tri-sulfa: Trimethoprim-sulfamethoxazole; NA: not available data



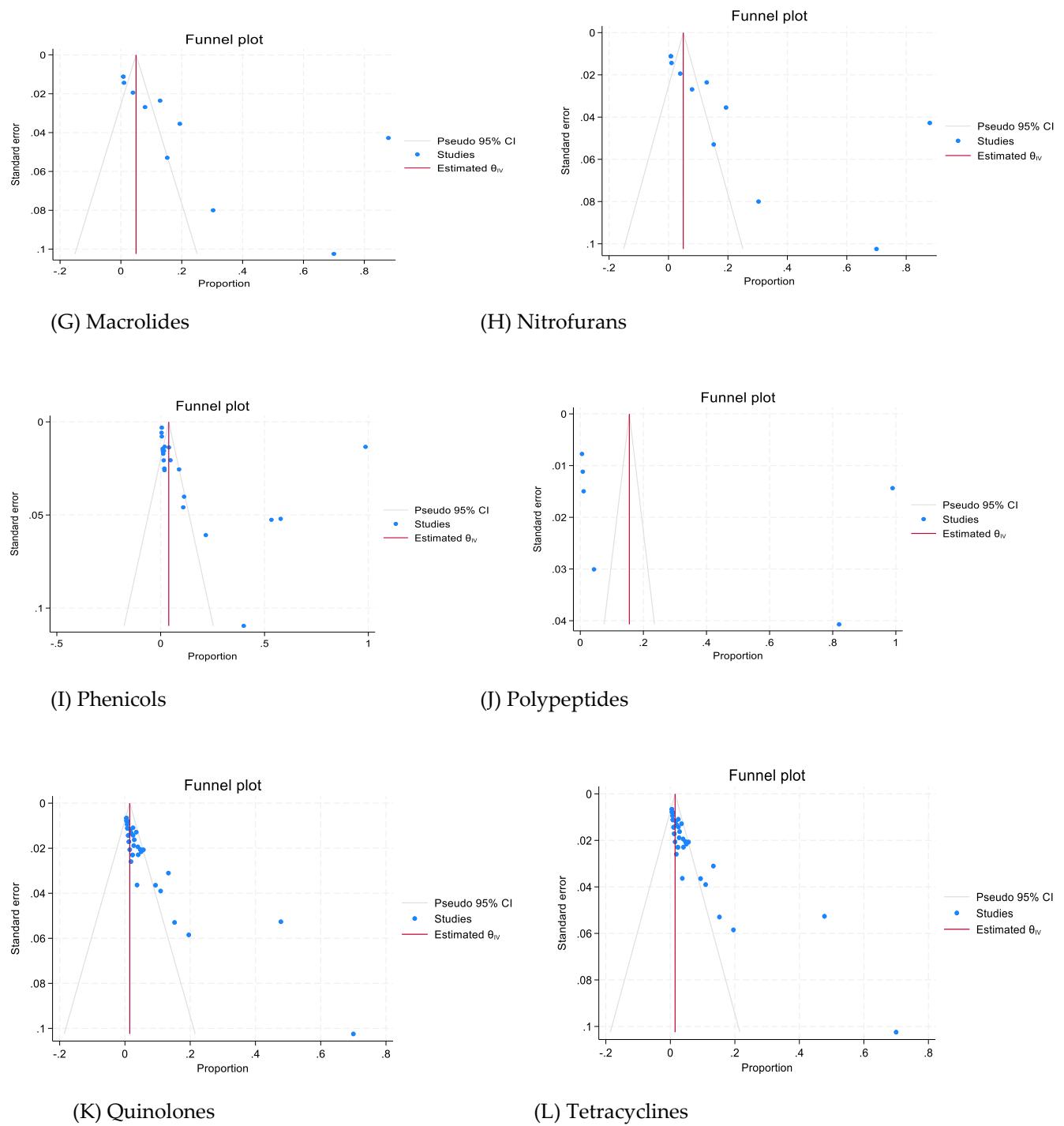


Figure S1. Funnel plots of prevalence of AMR in *V. parahaemolyticus* in shrimp to assess potential bias stratified by antimicrobial classes: (A) aminoglycosides; (B) beta-lactamases; (C) carbapenems; (D) cephalosporins; (E) folate pathway inhibitors/sulfonamides; (F) glycopeptides; (G) macrolides; (H) nitrofurans; (I) phenicols; (J) polypeptides; (K) Quinolones; (L) Tetracyclines, and a red vertical line represents the overall prevalence from meta-analysis and the diagonal lines provide 95% C.I.

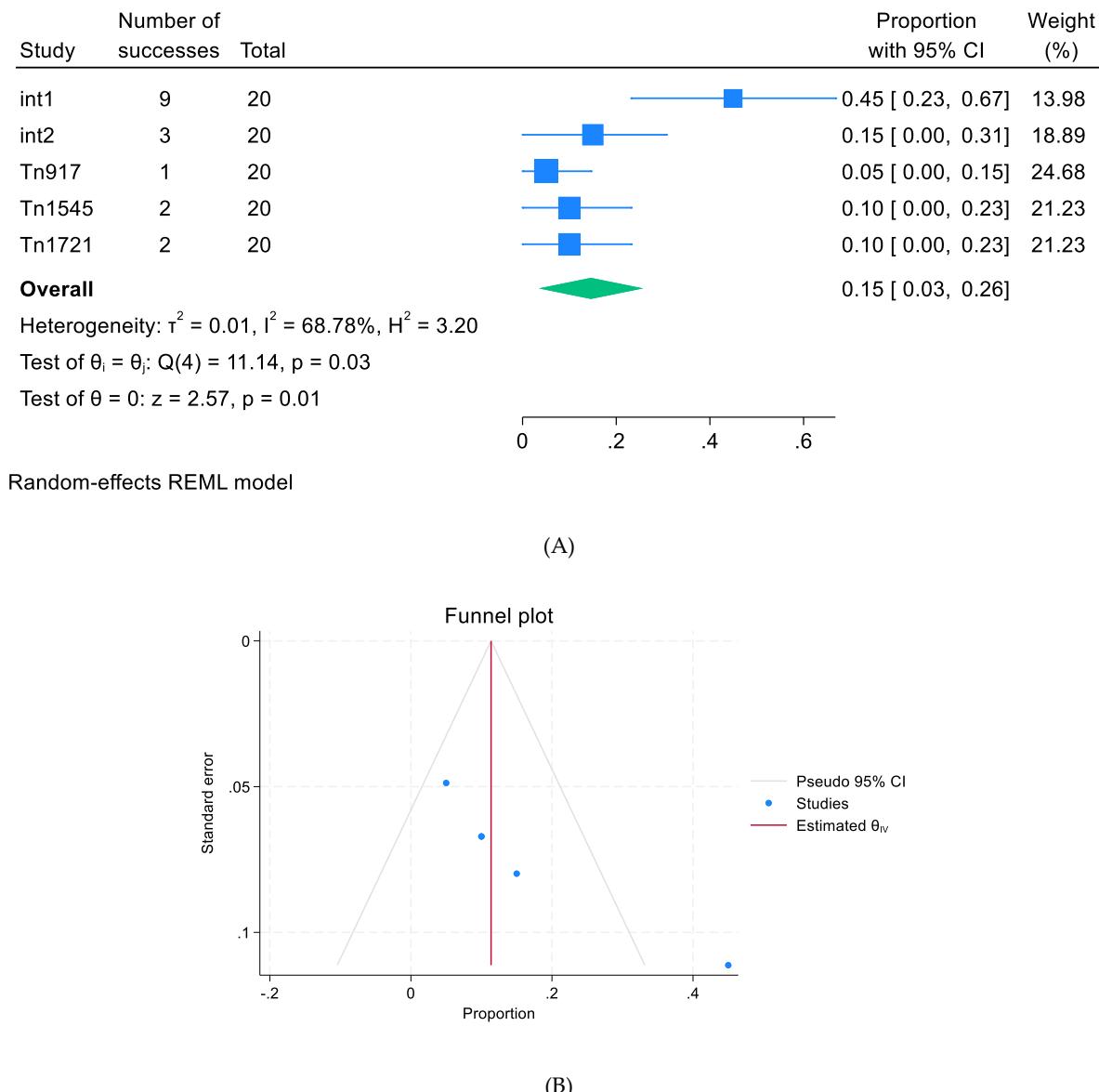


Figure S2. The meta-analysis of prevalence of resistance determinants from *V. parahaemolyticus* isolates in shrimp using random-effects model with a 95% C.I.; (A) a forest plot representing the results in meta-analysis with size squares proportional to the weight assigned to the study; (B) a funnel plot of occurrence of resistance determinants in *V. parahaemolyticus* to assess potential bias.