

Supplementary

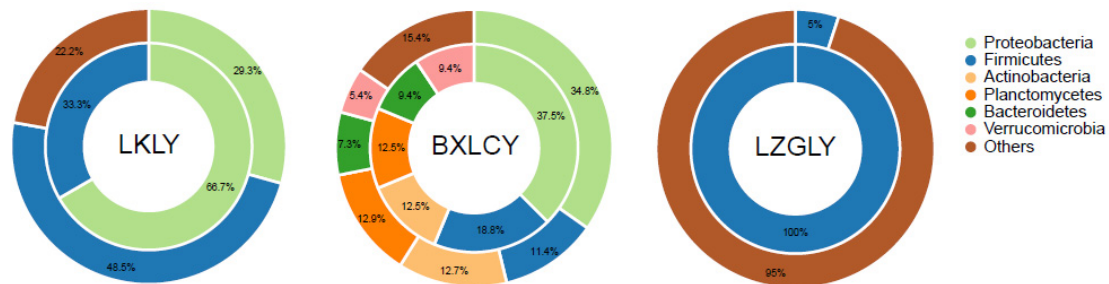


Figure S1. Attribution analysis of ARGs and bacteria phyla in all fish gut content samples showed by circle map.

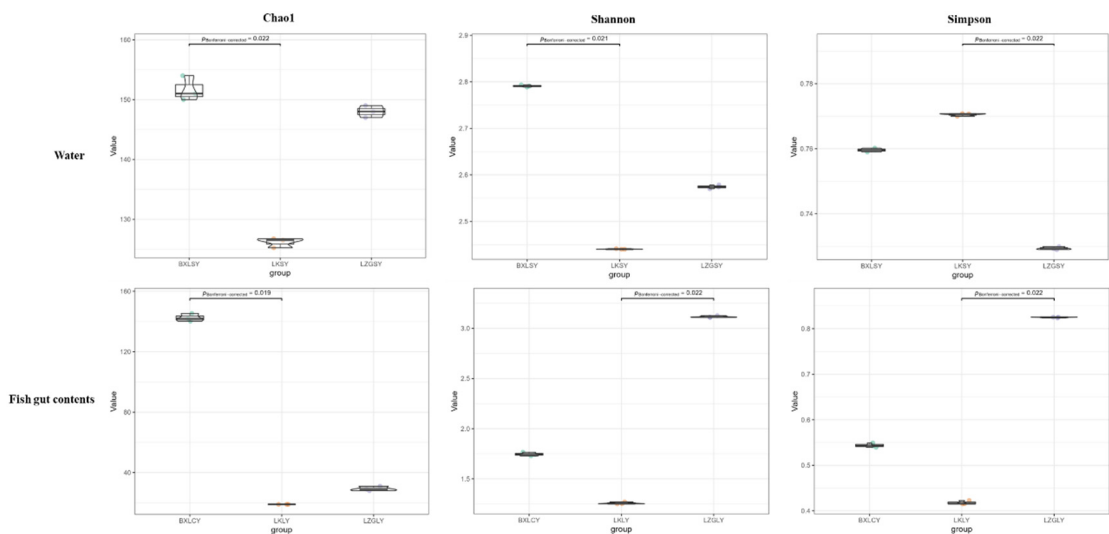


Figure S2. Alpha diversity of bacteria community in phylum level.

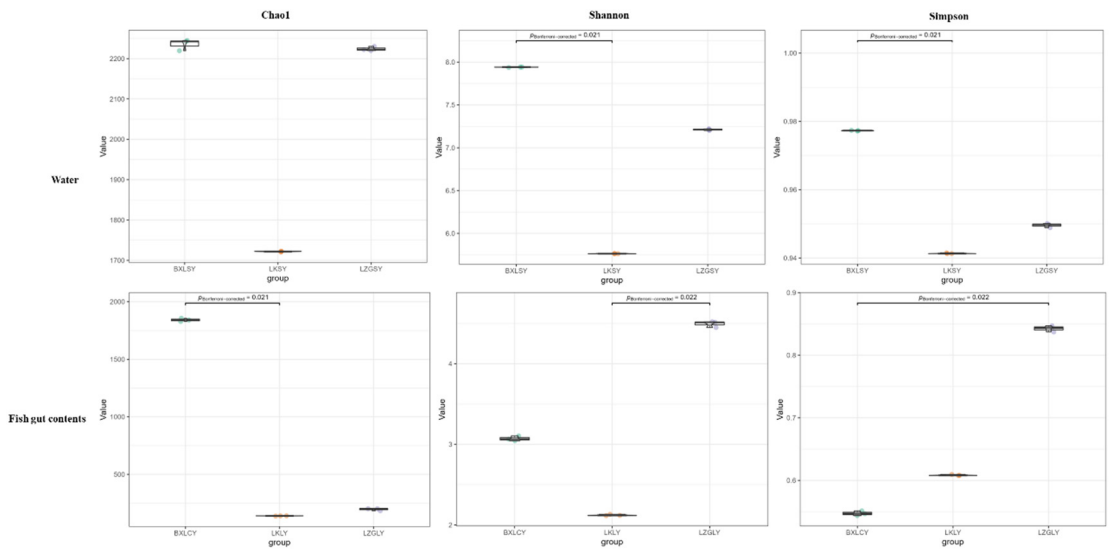


Figure S3. Alpha diversity of bacteria community in genus level.

Table S1 Antibiotics concentrations in water samples from three different fish farms

Antibiotics (ng/L)	LKSY1	LKSY2	LKSY3	LZGSY1	LZGSY2	LZGSY3	BXLSY1	BXLSY2	BXLSY3
Sulfamonomethoxine	0	0	0	0	0	0	0.21	0.26	0.29
Trimethoprim	0	0	0	0	0	0	6.24	6.26	6.25
Sulfamerazine	4.3	4.7	4.5	13.81	13.92	14.02	6.61	6.73	6.54
Sulfamethoxazole	0	0	0	0	0	0	48.41	48.35	48.37
Sulfadiazine	1.62	1.72	1.82	1.42	1.44	1.44	1.58	1.59	1.62
Sulfisoxazole	0	0	0	0	0	0	1.05	1.05	1.05
Sulfamethoxydiazine	0	0	0	0	0	0	4.45	4.45	4.35
Danofloxacin mesylate	0	0	0	0	0	0	1.51	1.45	1.45
Ciprofloxacin	1.34	1.33	1.35	3.05	3.06	3.05	4.95	4.96	4.94
Enoxacin	0	0	0	0	0	0	0.90	0.92	0.95
Norfloxacin	0.2	0.2	0.2	0	0	0	1.56	1.56	1.56
flumequine	0.61	0.63	0.65	0	0	0	0	0	0
Difloxacin	0	0	0	0	0	0	0.62	0.65	0.67
Ofloxacin	8.19	8.18	8.16	1.62	1.62	1.64	3.56	3.54	3.55
Enrofloxacin	1.77	1.79	1.77	9.48	9.49	9.48	22.27	22.28	22.26
Lomefloxacin	0	0	0	0	0	0	1.24	1.26	1.23
Oxytetracycline	0	0	0	0	0	0	0	0	0
Doxycycline	0	0	0	0	0	0	0	0	0
Timicosin	0	0	0	0	0	0	2.05	2.05	2.05
Azithromycin	0	0	0	0	0	0	5.64	5.65	5.65
Lincomycin	0	0	0	0	0	0	0	0	0
Florfenicol	1.03	1.02	1.05	4.94	4.95	4.95	2.01	2.03	2.03

Table S2 Antibiotics concentrations in fish gut content samples from three different fish farms

[illegible]

Table S3 Heavy metals concentrations in water samples from three different fish farms

Sample		Heavy metals (µg/L)													
name	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	As	Se	Ag	Cd	Pb	U	Hg
LKSY1	3.0	0.8	5.2	15.4	0.1	0.4	0.7	0.7	7.8	0.4	0.0	0.1	0.1	1.6	0.0
LKSY2	3.0	0.8	5.2	15.4	0.1	0.4	0.7	0.7	7.8	0.4	0.0	0.1	0.1	1.6	0.0
LKSY3	3.0	0.8	5.2	15.4	0.1	0.4	0.7	0.7	7.8	0.4	0.0	0.1	0.1	1.6	0.0
LZGSY1	5.2	1.3	141.1	51.0	0.9	2.6	1.0	1.4	11.8	0.5	0.0	0.1	0.1	9.6	0.0
LZGSY2	5.2	1.3	141.1	51.0	0.9	2.6	1.0	1.4	11.8	0.5	0.0	0.1	0.1	9.6	0.0
LZGSY3	5.2	1.3	141.1	51.0	0.9	2.6	1.0	1.4	11.8	0.5	0.0	0.1	0.1	9.6	0.0
BXLSY1	5.1	0.9	25.7	26.5	0.3	1.2	0.4	1.0	5.8	0.5	0.0	0.1	0.2	8.9	0.0
BXLSY2	5.1	0.9	25.7	26.5	0.3	1.2	0.4	1.0	5.8	0.5	0.0	0.1	0.2	8.9	0.0
BXLSY3	5.1	0.9	25.7	26.5	0.3	1.2	0.4	1.0	5.8	0.5	0.0	0.1	0.2	8.9	0.0

Table S4 Heavy metals concentrations in fish gut content samples from three different fish farms

Sample		Heavy metals (µg/kg)													
name	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	As	Se	Ag	Cd	Pb	U	Hg
LKLY1	310.0	684.0	31400.0	450000.0	118.0	488.0	4960.0	25800.0	245.0	374.0	22.3	1200.0	68.0	114.0	11.0
LKLY2	310.0	684.0	31400.0	450000.0	118.0	488.0	4960.0	25800.0	245.0	374.0	22.3	1200.0	68.0	114.0	11.0
LKLY3	310.0	684.0	31400.0	450000.0	118.0	488.0	4960.0	25800.0	245.0	374.0	22.3	1200.0	68.0	114.0	11.0
LZGLY1	114.0	232.0	2300.0	60000.0	44.0	130.0	1710.0	47700.0	16.0	387.0	6.9	86.0	45.8	30.0	3.0
LZGLY2	114.0	232.0	2300.0	60000.0	44.0	130.0	1710.0	47700.0	16.0	387.0	6.9	86.0	45.8	30.0	3.0
LZGLY3	114.0	232.0	2300.0	60000.0	44.0	130.0	1710.0	47700.0	16.0	387.0	6.9	86.0	45.8	30.0	3.0
BXLCY1	2040.0	1780.0	28300.0	970000.0	408.0	952.0	2740.0	9980.0	245.0	106.0	30.0	22.3	481.0	141.0	3.0
BXLCY2	2040.0	1780.0	28300.0	970000.0	408.0	952.0	2740.0	9980.0	245.0	106.0	30.0	22.3	481.0	141.0	3.0
BXLCY3	2040.0	1780.0	28300.0	970000.0	408.0	952.0	2740.0	9980.0	245.0	106.0	30.0	22.3	481.0	141.0	3.0