

Additional file 4. Minimum inhibitory concentration and zone of inhibition of antimicrobials for 50 *Escherichia coli* and 44 *Klebsiella pneumoniae* isolates from 10 wastewater treatment plants across Finland in 2021-2022.

Isolate ID (ECOFFs)	City	Time (mm/yy)	Species	MIC (mg/L)					Zone of inhibition (mm)	
				COL	P/T4	C/T	CZA	MRP	MRP10	ERP10
				2	8	1	ID	0.06 (0.125)	26 (24)	23 (21)
E1	Helsinki	02/21	<i>E. coli</i>	8	> 32	> 8	2	1	21.7	17.2
E2	Helsinki	02/21	<i>E. coli</i>	0.5	> 32	> 8	8	2	25.3	18.2
E3	Kuopio	04/21	<i>E. coli</i>	≤ 0.25	32	> 8	> 16	≤ 0.12	19.9	14.8
E4	Pietarsaari	04/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	> 16	> 16	10.9	6.5
E5	Helsinki	05/21	<i>E. coli</i>	0.5	> 32	8	≤ 1	1	20	16
E6	Kuopio	05/21	<i>E. coli</i>	≤ 0.25	32	> 8	> 16	≤ 0.12	20	15
E7	Pietarsaari	05/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	> 16	1	16	13
E8	Pietarsaari	05/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	> 16	16	12	6
E9	Tampere	05/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	1	20	16
E10	Tampere	05/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	1	20	16
E11	Tampere	05/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	1	19	16
E12	Turku	05/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	> 16	8	15	6
E13	Helsinki	07/21	<i>E. coli</i>	4	> 32	> 8	4	4	22.2	14.8
E14	Oulu	07/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	≤ 1	0.5	23.7	18
E15	Pietarsaari	07/21	<i>E. coli</i>	0.5	> 32	> 8	> 16	> 16	12	6
E16	Tampere	07/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	0.5	21.1	19.6
E17	Tampere	07/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	2	18.7	17
E18	Tampere	07/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	1	19	16.8
E19	Turku	07/21	<i>E. coli</i>	0.5	> 32	2	≤ 1	0.25	24.2	19.7
E20	Helsinki	08/21	<i>E. coli</i>	4	> 32	> 8	4	4	24.4	15.7
E21	Helsinki	08/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	4	8	17.4	7.3
E22	Tampere	08/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	2	25.1	18.7
E23	Tampere	08/21	<i>E. coli</i>	1	> 32	> 8	≤ 1	8	21.8	13.3

E24	Tampere	08/21	<i>E. coli</i>	1	4	0.5	≤ 1	≤ 0.12	41.1	38
E25	Tampere	08/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	4	25.9	18.4
E26	Helsinki	10/21	<i>E. coli</i>	2	> 32	> 8	4	4	26.4	18.2
E27	Helsinki	10/21	<i>E. coli</i>	0.5	> 32	> 8	8	2	28.3	16.7
E28	Helsinki	10/21	<i>E. coli</i>	8	> 32	> 8	8	2	26.8	17
E29	Helsinki	10/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	≤ 0.12	35	25.2
E30	Tampere	10/21	<i>E. coli</i>	0.5	> 32	> 8	8	2	21.2	17.2
E31	Tampere	10/21	<i>E. coli</i>	0.5	8	0.5	≤ 1	≤ 0.12	36.7	34.8
E32	Tampere	10/21	<i>E. coli</i>	1	> 32	> 8	≤ 1	2	21.5	17.5
E33	Tampere	10/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	4	21.6	18.7
E34	Tampere	10/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	1	26.3	22.3
E35	Helsinki	11/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	4	2	21.5	14.6
E36	Helsinki	11/21	<i>E. coli</i>	2	> 32	0.5	≤ 1	0.5	22.7	20.2
E37	Kuopio	11/21	<i>E. coli</i>	≤ 0.25	> 32	> 8	> 16	16	17.2	14.3
E38	Seinäjäki	11/21	<i>E. coli</i>	≤ 0.25	> 32	0.5	≤ 1	0.5	28.8	25.1
E39	Seinäjäki	11/21	<i>E. coli</i>	0.5	> 32	0.5	≤ 1	0.25	26.7	26.1
E40	Seinäjäki	11/21	<i>E. coli</i>	≤ 0.25	> 32	0.5	≤ 1	0.25	27.3	25.6
E41	Seinäjäki	11/21	<i>E. coli</i>	≤ 0.25	> 32	0.5	≤ 1	0.5	27.8	25.3
E42	Seinäjäki	11/21	<i>E. coli</i>	0.5	> 32	0.5	≤ 1	0.5	28.2	26.8
E43	Tampere	11/21	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	2	14.7	13.6
E44	Tampere	11/21	<i>E. coli</i>	0.5	> 32	> 8	8	1	15.6	16.2
E45	Espoo	01/22	<i>E. coli</i>	0.5	4	0.5	≤ 1	≤ 0.12	29.2	26.7
E46	Oulu	01/22	<i>E. coli</i>	0.5	> 32	> 8	> 16	> 16	14.3	12.9
E47	Tampere	01/22	<i>E. coli</i>	0.5	> 32	> 8	≤ 1	4	16.9	13.8
E48	Turku	01/22	<i>E. coli</i>	0.5	> 32	> 8	> 16	> 16	15	9.9
E49	Tampere	02/22	<i>E. coli</i>	0.5	> 32	> 8	8	1	21.6	15.5
E50	Tampere	02/22	<i>E. coli</i>	0.5	> 32	> 8	8	1	21	16.5
K1	Rovaniemi	02/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	4	16	12.9	9.63
K2	Lappeenranta	04/21	<i>K. pneumoniae</i>	0.5	32	2	≤ 1	0.5	26.0	19.3
K3	Rovaniemi	04/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	4	8	14.8	9.5

K4	Turku	04/21	<i>K. pneumoniae</i>	0.5	> 32	1	2	1	24.4	15.9
K5	Espoo	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	2	> 16	9	6
K6	Espoo	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	2	> 16	9	6
K7	Espoo	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	2	> 16	9	6
K8	Espoo	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	2	> 16	9	6
K9	Kuopio	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	≤ 1	> 16	10	6
K10	Rovaniemi	05/21	<i>K. pneumoniae</i>	≤ 0.25	> 32	> 8	≤ 1	4	18	16
K11	Rovaniemi	05/21	<i>K. pneumoniae</i>	≤ 0.25	> 32	> 8	4	4	16	13
K12	Rovaniemi	05/21	<i>K. pneumoniae</i>	≤ 0.25	> 32	> 8	≤ 1	4	18	16
K13	Rovaniemi	05/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	8	4	16	13
K14	Turku	05/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	4	18	15
K15	Helsinki	07/21	<i>K. pneumoniae</i>	0.5	> 32	2	≤ 1	2	18.3	6
K16	Rovaniemi	07/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	2	19.9	19
K17	Rovaniemi	07/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	2	21.9	21.8
K18	Rovaniemi	07/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	2	16.6	16.9
K19	Rovaniemi	07/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	4	4	14.7	13.3
K20	Tampere	07/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	1	22.7	17.9
K21	Oulu	08/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	4	16	9	6
K22	Oulu	08/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	8	19.5	13.4
K23	Tampere	08/21	<i>K. pneumoniae</i>	2	> 32	> 8	≤ 1	4	18.7	11.1
K24	Tampere	08/21	<i>K. pneumoniae</i>	≤ 0.25	8	0.5	≤ 1	≤ 0.12	34.7	23.6
K25	Turku	08/21	<i>K. pneumoniae</i>	0.5	16	2	≤ 1	> 16	11.8	6
K26	Helsinki	10/21	<i>K. pneumoniae</i>	2	> 32	> 8	≤ 1	8	24	11.2
K27	Lappeenranta	10/21	<i>K. pneumoniae</i>	0.5	16	4	≤ 1	1	24.2	11.7
K28	Rovaniemi	10/21	<i>K. pneumoniae</i>	> 8	> 32	> 8	4	8	19.5	13.4
K29	Rovaniemi	10/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	4	20.5	16.9
K30	Rovaniemi	10/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	4	23	17.7
K31	Turku	10/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	8	18.3	15
K32	Helsinki	11/21	<i>K. pneumoniae</i>	1	> 32	2	≤ 1	2	22.7	18.7
K33	Oulu	11/21	<i>K. pneumoniae</i>	≤ 0.25	> 32	> 8	8	> 16	6	6

K34	Rovaniemi	11/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	4	16.8	16.1
K35	Rovaniemi	11/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	4	16	15	13.8
K36	Rovaniemi	11/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	2	14.5	16
K37	Rovaniemi	11/21	<i>K. pneumoniae</i>	0.5	> 32	> 8	≤ 1	4	16.3	15.4
K38	Helsinki	01/22	<i>K. pneumoniae</i>	0.5	> 32	2	≤ 1	1	20.7	17.5
K39	Helsinki	01/22	<i>K. pneumoniae</i>	0.5	> 32	2	≤ 1	4	15.6	10.6
K40	Helsinki	01/22	<i>K. pneumoniae</i>	0.5	> 32	2	≤ 1	2	21.3	16.2
K41	Rovaniemi	01/22	<i>K. pneumoniae</i>	> 8	> 32	> 8	8	8	12.4	11
K42	Rovaniemi	01/22	<i>K. pneumoniae</i>	> 8	> 32	> 8	4	16	10.9	7.9
K43	Espoo	02/22	<i>K. pneumoniae</i>	0.5	> 32	> 8	8	16	9.2	7.9
K44	Tampere	02/22	<i>K. pneumoniae</i>	0.5	> 32	> 8	1	2	14.2	14

Epidemiological cut-off values (ECOFFs) (mg/L and mm) are indicated. ECOFFs in brackets for *K. pneumoniae* differing from ECOFFs for *E. coli*. Isolate ID (identification number) with bold lettering indicates that the isolate was subjected to sequencing. I/D displays insufficient data. COL, Colistin. P/T4, Piperacillin/Tazobactam constant 4. C/T, Ceftolozane/Tazobactam 4. CZA, Ceftazidime/Avibactam. MRP, Meropenem. MRP10 Meropenem (10µg), ERT10 Ertapenem (10µg).