Supplementary file

Resistance mapping and genetic diversity of ESBL *Escherichia coli* isolated from largest fresh cum brackish water of the Vembanad Lake, Kerala, India

Murugadas Vaiyapuri1\*, Anna SherinPulithara Sebastian1, Iris George1,Sandhya Soolamkandath Variem1#, Radhakrishnan Nair Vasudevan1, Joshy Chalil George2,Madhusudana Rao Badireddy 3, Visnuvinayagam Sivam1, Shaheer Peeralil1, Devi Sanjeev1,Muthulakshmi Thandapani1, Sheela Albert Moses 4, Ravishankar Chandragiri Nagarajarao2 and Mukteswar Prasad Mothadaka 1

**Affiliations**:

1. Microbiology, Fermentation and Biotechnology Division, ICAR-Central Institute of Fisheries Technology (ICAR-CIFT), Cochin, Kerala, India
2. Fish Processing Division, ICAR-CIFT, Cochin, Kerala, India
3. Research Centre of ICAR-CIFT, Visakhapatnam, Andhra Pradesh, India.
4. Central Pollution Control Board, Trivandrum, Kerala, India

# Biological Oceanography Division, CSIR – National Institute of Oceanography, Goa, India

**Table S1. Diversity and distribution of AMR & ESBL *E. coli* between the sampling points of Vembanad Lake, Kerala, India.**

|  |  |  |
| --- | --- | --- |
| **Alapuzha Region** | **Ernakulam Region** | **Kottayam Region** |
| **Sample points with geographical coordinates** | **MDR & (No. of antibiotic classes Resistant)** | **No. of *E. coli*** | **Avg. MAR index** | **Inc Plasmid detected** | **Sample points****Sample points with geographical coordinates** | **MDR & (No. of antibiotic classes Resistant)** | **No. of *E. coli*** | **Avg. MAR index** | **Inc Plasmid detected** | **Sample points****Sample points with geographical coordinates** | **MDR & (No. of antibiotic classes Resistant)** | **No. of *E. coli*** | **Avg. MAR index** | **Inc Plasmid detected** |
| A | - (2 classes) | 2 | 0.133 | Nil | R | 1 (1-4 classes) | 3 | 0.11 | IncB/O, F | Z | 1 (1-3 class) | 6 | 0.088 (1 ≥ 0.2) | IncB/O, IncF; IncB/O, IncP1α |
| B | - | - | - | - | S | 1 (5 classes) | 2 | 0.166 (1 culture ≥ 0.2) | - | AB | 4 (5-6 class) | 4 | **0.35 (All ≥ 0.2)** | IncP1α, IncFIIA, IncF |
| C | - | - | - | - | T | 1 (0-5 classes) | 1 | 0.33 | - | AC | 5 (0-9 class) | 10 | **0.24 (5 cultures ≥ 0.2)** | IncF; IncF, IncW; IncF, IncHI1, IncI1 |
| D | - | - | - | - | U | 1 (1-5 classes) | 4 | 0.11 (1 culture ≥ 0.2) | IncB/O, IncI1; IncFIIA, IncP1α | AD | 6 (2-7 class) | 7 | **0.32 (6 cultures ≥ 0.2)** | IncB/O, IncHI1, IncI1, IncF;IncB/O, IncF, IncHI1;IncB/O, IncI1;IncB/O, IncHI1 |
| E | - | - | - | - | V | - (0-1 classes) | 4 | 0.033 | IncF, IncP1α | AE | 1 (0-5 class) | 6 | 0.1 (1 ≥ 0.2) | IncB/O, IncP1α; IncB/O |
| F | - (1 class) | 9 | 0.0074 | IncF | W | - (0-1 classes) | 2 | 0.033 | - | AF | - (2 class) | 4 | 0.133 | IncI1, IncP1α |
| G | 1 (1-3 classes) | 3 | 0.111 | IncI1 | X | 1 (1-3 classes) | 4 | 0.13 (1 culture ≥ 0.2) | IncB/O | AG | - | - | - |  |
| H | - | - | - | - | Y | - (1-2 classes) | 3 | 0.11 | - | AH | - (0-1 class) | 7 | 0.038 | IncB/O, IncP1α, IncFIIA, IncN;IncFIIA |
| I | 2 (2-6 classes) | 3 | **0.28 (2 cultures ≥ 0.2)** | **-** |  |  |  |  |  | AI | - (0-1 class) | 4 | 0.05 | - |
| J | 5 (1-6 classes) | 7 | **0.25 (4 cultures ≥ 0.2)** | IncB/O; IncF, IncP1α |  |  |  |  |  | AJ | - (1-2 class) | 2 | 0.1 | IncF, IncK/B, IncW, IncN |
| K | - | - | - | **-** |  |  |  |  |  |  |  |  |  |  |
| L | - | - | - | **-** |  |  |  |  |  |  |  |  |  |  |
| M | - (1-2 classes) | 6 | 0.066 | IncB/O; IncW; IncB/O, IncF |  |  |  |  |  |  |  |  |  |  |
| N | - (1 classes) | 4 | 0.066 | IncB/O, IncF; IncB/O, IncK/B |  |  |  |  |  |  |  |  |  |  |
| O | 2 (5-7 classes) | 2 | **0.4 (2 cultures ≥ 0.2)** | **-** |  |  |  |  |  |  |  |  |  |  |
| P | 3 (3-7 classes) | 3 | **0.288 (3 cultures ≥ 0.2)** | **-** |  |  |  |  |  |  |  |  |  |  |
| Q | - (1-2 classes) | 4 | 0.083 | IncB/O, IncP1α |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Geographical coordinates of the stations

**Alapuzha** **region**

A - 9°30'10.9"N 76°21'23.8"E; B- 9°30'6.0"N 76°21'11.3"E; C- 9°29'58.0"N 76°21'32.3"E;

D - 9°30'23.0"N 76°22'11.3"E; E - 9°31'5.0"N 76°22'46.3"E; F - 9°36'55.0"N 76°22'50.0"E;

G - 9°37'12.0"N 76°22'58.0"E; H - 9°40'17.0"N 76°23'33.0"E; I - 9°40'41.0"N 76°23'40.0"E; J - 9°41'08.0"N 76°23'20.0"E;

K - 9°35'44.0"N 76°22'19.0"E; L - 9°31'29.0"N 76°21'27.0"E; M - 9°37'20.2"N 76°22'34.2"E; N - 9°40'55.4"N 76°22'57.8"E;

O - 9°48'09.0"N 76°19'33.0"E; P - 9°48'52.5"N 76°19'18.9"E; Q - 9°51'46.3"N 76°17'46.8"E;

**Ernakulam** **Region**

R - 9°56'49.1"N 76°17'21.2"E; S - 9°58'48.1"N 76°16'28.2"E; T - 9°59'23.1"N 76°15'40.9"E; U - 10°00'45.7"N 76°14'13.4"E;

V - 10°02'48.1"N 76°13'55.2"E; W - 10°06'53.6"N 76°12'36.3"E; X - 10°08'26.0"N 76°12'11.2"E; Y - 10°10'22.7"N 76°10'46.7"E;

**Kottayam** **Region**

Z - 9°37'55.0"N 76°25'05.2"E; AB - 9°38'29.8"N 76°25'06.5"E; AC - 9°38'47.8"N 76°25'13.4"E; AD - 9°39'56.8"N 76°24'27.3"E;

AE - 9°40'21.9"N 76°23'55.9"E; AF - 9°40'32.3"N 76°23'37.2"E; AG - 9°38'56.9"N 76°22'56.4"E;

AH - 9°38'27.6"N 76°23'46.8"E; AI - 9°44'40.3"N 76°23'24.6"E; AJ - 9°44'58.6"N 76°23'21.2"E