**Research article**

*Listeria monocytogenes* isolates from Western Cape, South Africa exhibit resistance to multiple antibiotics and contradicts certain global resistance patterns

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**Table S1.** Studies indicating the prevalence of antibiotic resistance of *Listeria monocytogenes* to ampicillin, chloramphenicol, erythromycin, gentamicin, and tetracycline

| Antibiotic   | Origin                                              | Reference | *L. monocytogenes* isolates resistant/isolates tested (%) |
|--------------|-----------------------------------------------------|-----------|----------------------------------------------------------|
| Ampicillin   | Clinical, USA                                       | [67]      | 6/65 (9.2%)                                              |
|              | Clinical, Iran                                      | [64]      | 14/14 (100%)                                             |
|              | Seafood, Iran                                       | [9]       | 107/278 (38.5%)                                          |
|              | Seafood (open-air fish markets), Iran               | [60]      | 9/43 (20.9%)                                             |
|              | Chicken, Iran                                       | [64]      | 14/14 (100%)                                             |
|              | Poultry, Iran                                       | [30]      | 44/98 (44.9%)                                            |
|              | Raw meat, Italy                                     | [65]      | 8/40 (20%)                                               |
|              | Pork, China                                         | [79]      | 3/26 (11.5%)                                             |
|              | Meat products, Turkey                               | [66]      | 5/66 (7.5%)                                              |
|              | Dairy products, Iran                                | [32]      | 5/19 (26.3%)                                             |
|              | RTE products, Spain                                 | [31]      | 8/25 (32%)                                               |
|              | RTE products, Poland                                | [53]      | 20/210 (9.5%)                                            |

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| Antibiotic      | Origin                                      | Reference | L. monocytogenes isolates resistant/isolates tested (%) |
|-----------------|---------------------------------------------|-----------|--------------------------------------------------------|
| Chloramphenicol | Clinical, USA                               | [67]      | 7/54 (12.9%)                                           |
|                 | Seafood, Iran                               | [9]       | 9/278 (3.2%)                                           |
|                 | Seafood (open-air fish markets), Iran       | [60]      | 1/43 (2.3%)                                            |
|                 | Poultry, Iran                               | [30]      | 24/98 (24.5%)                                          |
|                 | Dairy products, Iran                        | [32]      | 2/19 (10.5%)                                           |
|                 | Vegetables, Nigeria                         | [93]      | 60/104 (57.7%)                                         |
|                 | RTE meat products, China                   | [100]     | 11/33 (33.3%)                                          |
| Erythromycin    | Clinical, USA                               | [67]      | 1/84 (1.9%)                                            |
|                 | Seafood, Iran                               | [9]       | 7/278 (2.5%)                                           |
|                 | Seafood (open-air fish markets), Iran       | [60]      | 12/43 (27.9%)                                          |
|                 | Seafood, Poland                             | [101]     | 33/70 (47.1%)                                          |
|                 | Poultry, Iran                               | [30]      | 15/98 (15.3%)                                          |
|                 | Raw meat, Italy                             | [65]      | 2/40 (5%)                                              |
|                 | Pork, China                                 | [79]      | 3/26 (11.5%)                                           |
|                 | Dairy products, Iran                        | [32]      | 3/19 (15.8%)                                           |
|                 | Vegetables, Nigeria                         | [93]      | 23/104 (22.1%)                                         |
| Gentamycin      | Clinical, USA                               | [67]      | 2/52 (2%)                                              |
|                 | Clinical, Iran                              | [64]      | 1/14 (7.1%)                                            |
|                 | Seafood, Iran                               | [9]       | 2/278 (0.72%)                                          |
|                 | Chicken, Iran                               | [64]      | 1/14 (7.1%)                                            |
|                 | Poultry, Iran                               | [30]      | 10/98 (10.2%)                                          |
|                 | Raw meat, Italy                             | [65]      | 3/40 (7.5%)                                            |
|                 | Pork, China                                 | [79]      | 1/26 (3.9%)                                            |
|                 | Dairy products, Iran                        | [32]      | 1/19 (5.3%)                                            |
|                 | Vegetables, Nigeria                         | [93]      | 33/104 (31.7%)                                         |
|                 | RTE products, Spain                         | [31]      | 1/25 (4%)                                              |
| Tetracycline    | Clinical, USA                               | [67]      | 2/66 (3%)                                              |
|                 | Seafood, Iran                               | [9]       | 52/278 (18.7%)                                         |
|                 | Poultry, Iran                               | [30]      | 34/98 (34.7%)                                          |
|                 | Raw meat, Italy                             | [65]      | 1/40 (2.5%)                                            |
|                 | Chilled pork, China                         | [79]      | 7/26 (26.9%)                                           |
|                 | Dairy products, Iran                        | [32]      | 3/19 (15.8%)                                           |
|                 | Vegetables, Nigeria                         | [93]      | 32/104 (30.8%)                                         |
|                 | RTE products, Spain                         | [31]      | 12/25 (48%)                                            |
|                 | RTE meat products, China                   | [100]     | 4/33 (12.1%)                                           |
|                 | Food processing environment, Canada         | [102]     | 3/54 (5.6%)                                            |
Table S2. *Listeria monocytogenes* isolates from the period 2017–2019 showing resistance to one or more antibiotic in various categories (isolates susceptible to all antibiotics not shown). MDR isolates highlighted in bold.

| Sample | Category       | Subcategory (additional description, as provided by supplier) | Lineage | Ampicillin | Chloramphenicol | Erythromycin | Gentamicin | Tetracycline |
|--------|----------------|---------------------------------------------------------------|---------|------------|-----------------|--------------|-------------|--------------|
| CLM17  | Clinical       | Unknown                                                       | I       | -          | R               | R            | R           | R            |
| MEN30  | Environmental  | Drain (preparation area)                                      | I       | -          | R               | R            | -           | -            |
| MEN34  | Environmental  | Drain (production)                                            | I       | -          | -               | R            | -           | -            |
| MEN26  | Environmental  | Drain (preparation area)                                      | I       | -          | R               | -            | -           | -            |
| MEN31  | Environmental  | Drain (cooking area)                                          | II      | -          | R               | R            | -           | -            |
| MEN47  | Environmental  | Drain                                                          | I       | -          | R               | R            | -           | -            |
| MEN01  | Environmental  | Drain (mixer)                                                 | I       | -          | -               | -            | R           | -            |
| MEN04  | Environmental  | Drain (mixer)                                                 | I       | -          | -               | R            | -           | -            |
| MEN48  | Environmental  | Equipment                                                      | I       | -          | -               | R            | -           | -            |
| MEN11  | Environmental  | Equipment                                                      | I       | -          | -               | R            | -           | -            |
| MEN36  | Environmental  | Floor                                                          | II      | -          | -               | R            | -           | -            |
| MEN38  | Environmental  | Hand (during production)                                      | II      | -          | R               | R            | -           | R            |
| MEN14  | Environmental  | Surface (red cutting boards)                                   | II      | -          | R               | R            | -           | -            |
| MEN15  | Environmental  | Surface (production tables)                                    | II      | -          | -               | R            | -           | -            |
| MVA03  | Environmental  | Unknown                                                        | II      | -          | -               | R            | -           | -            |

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| Sample  | Category    | Subcategory (additional description, as provided by supplier) | Lineage | Ampicillin | Chloramphenicol | Erythromycin | Gentamicin | Tetracycline |
|---------|-------------|---------------------------------------------------------------|---------|------------|-----------------|--------------|------------|-------------|
| MRA32   | Raw meats   | Beef (mince)                                                  | II      | -          | -               | R            | R          | R           |
| MRA32a  | Raw meats   | Beef (mince)                                                  | II      | -          | -               | R            | -          | -           |
| MRA18   | Raw meats   | Beef                                                          | I       | -          | R               | R            | -          | R           |
| MRA03   | Raw meats   | Beef (mince)                                                  | II      | -          | -               | R            | -          | -           |
| MRA31   | Raw meats   | Chicken (whole birds)                                         | I       | -          | -               | -            | -          | R           |
| MRA34   | Raw meats   | Chicken (fresh breasts)                                       | I       | -          | -               | R            | -          | R           |
| MRA42   | Raw meats   | Chicken (frozen thighs)                                       | I       | -          | -               | -            | -          | R           |
| MRA43   | Raw meats   | Chicken (pieces)                                              | II      | -          | -               | -            | -          | R           |
| MRA46   | Raw meats   | Chicken (mixed portions)                                      | I       | -          | -               | -            | -          | R           |
| MRA17   | Raw meats   | Chicken (drumsticks)                                          | I       | -          | -               | R            | -          | R           |
| MRA36   | Raw meats   | Pork (BBQ portions)                                           | II      | -          | R               | R            | -          | R           |
| MRA23   | Raw meats   | Unknown                                                       | I       | -          | -               | R            | -          | -           |
| MRA26a  | Raw meats   | Unknown                                                       | II      | -          | R               | R            | -          | -           |
| MRA26   | Raw meats   | Unknown                                                       | II      | -          | R               | R            | -          | -           |
| MRA20   | Raw meats   | Unknown                                                       | I       | -          | R               | R            | -          | -           |
| MRA11   | Raw meats   | Unknown                                                       | I       | -          | -               | R            | -          | -           |
| MRA13   | Raw meats   | Unknown                                                       | I       | -          | -               | -            | R          | -           |
| MRA14   | Raw meats   | Unknown                                                       | I       | -          | -               | R            | -          | -           |
| MRA20a  | Raw meats   | Unknown                                                       | I       | -          | -               | R            | -          | -           |
| MRA21   | Raw meats   | Unknown                                                       | I       | -          | R               | R            | -          | -           |
| MRA33   | Raw meats   | Unknown                                                       | II      | -          | -               | R            | -          | -           |
| MRA30   | Raw meats   | Unknown                                                       | I       | -          | -               | R            | -          | -           |

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| Sample  | Category     | Subcategory (additional description, as provided by supplier) | Lineage | Ampicillin | Chloramphenicol | Erythromycin | Gentamicin | Tetracycline |
|---------|--------------|--------------------------------------------------------------|---------|------------|----------------|--------------|------------|-------------|
| MRA02   | Raw seafood  | Seafood                                                      | I       | -          | -              | -            | -          | R           |
| MVA02   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | R           |
| MVA05   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA30   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA38   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA41   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA44   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA47   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA56   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |
| MVA62   | Raw seafood  | Seafood                                                      | II      | -          | -              | -            | -          | R           |
| MVA65   | Raw seafood  | Seafood                                                      | I       | -          | -              | R            | -          | -           |

Raw seafood: total tested n=61

**Ready-to-eat: total tested n=34**

| Sample  | Category     | Subcategory (additional description, as provided by supplier) | Lineage | Ampicillin | Chloramphenicol | Erythromycin | Gentamicin | Tetracycline |
|---------|--------------|--------------------------------------------------------------|---------|------------|----------------|--------------|------------|-------------|
| MRE21   | Ready-to-eat | Deli meat (bacon breakfast griller)                          | II      | -          | -              | R            | -          | -           |
| MRE40   | Ready-to-eat | Deli meat (cheese griller)                                   | I       | -          | -              | R            | -          | R           |
| MRE17   | Ready-to-eat | Deli meat (pepper beef)                                      | II      | -          | -              | R            | -          | -           |
| MRA04   | Ready-to-eat | Fresh produce                                                | I       | -          | -              | R            | -          | R           |
| MRE32   | Ready-to-eat | Fresh produce (coriander after dipping)                      | I       | -          | -              | R            | R          | R           |
| MRE38   | Ready-to-eat | Hummus                                                       | II      | -          | R              | -            | -          | -           |
| Sample | Category       | Subcategory (additional description, as provided by supplier) | aLineage | Ampicillin | Chloramphenicol | Erythromycin | Gentamicin | Tetracycline |
|--------|----------------|---------------------------------------------------------------|----------|------------|-----------------|--------------|------------|-------------|
| MRE07  | Ready-to-eat   | Hummus                                                        | II       | -          | -               | R            | -          | -           |
| MRE08  | Ready-to-eat   | Hummus (red pepper)                                          | II       | -          | -               | R            | -          | -           |
| Hb6    | Ready-to-eat   | Polony                                                        | II       | -          | R               | -            | -          | -           |
| Hb4    | Ready-to-eat   | Polony                                                        | II       | -          | R               | R            | -          | R           |

aIsolates from the same category are not necessarily from the same retail outlet, or environmental origin. Isolates with similar descriptions are not referring to duplicates.

bThese isolates were characterised into lineage groups by PCR-RFLPs [51].

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