**HYG-OM-7667-Sep-16 Revision 2**

**Two levels of specialisation among bacteraemic *Escherichia coli* strains revealed by their comparison with commensal strains**

O. Clermont,1,2 C. Couffignal,1,2,3 J. Blanco,4 F. Mentré,1,2,3 B. Picard,1,5 E. Denamur,1,2,3 and the COLIVILLE\* and COLIBAFI† Groups

**Supplementary Material**

3 Tables (Tables S1 to S3)

Table S1: Virulence factor genes detected in *E. coli* strains of the commensal and clinical collections with urinary-source and digestive-source for B2 phylogroup strains

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Matched commensal and urinary-source strains** | | |  | **Matched commensal and digestive-source strains** | | |
| **Virulence traits** | **Function** | **B2 phylogroup strains n (%)\*** | | **Adjusted**  **p values**† |  | **B2 phylogroup strains n (%)\*** | | **Adjusted**  **p values**† |
| **Commensal (n =47)** | **Clinical**  **(n = 89)** |  | **Commensal (n =21)** | **Clinical**  **(n = 22)** |
| *iha* | Adhesin | 14 (29.8) | 41 (46.1) | 0.73 |  | 6 (28.6) | 7 (31.8) | 0.96 |
| *papC* | Adhesin | 19 (40.4) | 74 (83.1) | <.01 |  | 10 (47.6) | 8 (36.4) | 0.96 |
| *hra* | Adhesin | 19 (40.4) | 31 (34.8) | 0.73 |  | 8 (38.1) | 7 (31.8) | 0.96 |
| *sfa/foc* | Adhesin | 25 (53.2) | 40 (44.9) | 0.73 |  | 10 (47.6) | 10 (45.5) | 0.96 |
| *papGII*‡ | Adhesin | 8 (17) | 63 (70.8) | <.01 |  | 5 (23.8) | 4 (18.2) | 0.96 |
| *ibeA* | Invasin/Adhesin | 15 (31.9) | 3 (3.4) | <.01 |  | 9 (42.9) | 4 (18.2) | 0.96 |
| *papGIII*‡ | Adhesin | 12 (25.5) | 14 (15.7) | 0.73 |  | 5 (23.8) | 4 (18.2) | 0.96 |
|  |  |  |  |  |  |  |  |  |
| *irp2* | Iron acquisition | 43 (91.5) | 89 (100) | 0.08 |  | 19 (90.5) | 22 (100) | 0.96 |
| *fyuA* | Iron acquisition | 43 (91.5) | 89 (100) | 0.08 |  | 19 (90.5) | 22 (100) | 0.96 |
| *iucC* | Iron acquisition | 24 (51.1) | 73 (82) | <.01 |  | 13 (61.9) | 13 (59.1) | 0.96 |
| *iroN* | Iron acquisition | 35 (74.5) | 76 (85.4) | 0.73 |  | 17 (81) | 14 (63.6) | 0.96 |
| *ireA* | Iron acquisition | 16 (34) | 52 (58.4) | 0.10 |  | 6 (28.6) | 4 (18.2) | 0.96 |
|  |  |  |  |  |  |  |  |  |
| *ompT* | Protectin | 41 (87.2) | 80 (89.9) | 0.73 |  | 21 (100) | 17 (77.3) | 0.40 |
| *traT* | Protectin | 24 (51.1) | 60 (68.2) | 0.61 |  | 9 (42.9) | 11 (50) | 0.96 |
| *neuC* | Protectin | 21 (44.7) | 31 (34.8) | 0.73 |  | 9 (42.9) | 6 (27.3) | 0.96 |
|  |  |  |  |  |  |  |  |  |
| *usp* | Toxin | 45 (95.7) | 84 (94.4) | 0.73 |  | 19 (90.5) | 20 (90.9) | 0.96 |
| *sat* | Toxin | 9 (19.1) | 35 (39.3) | 0.22 |  | 4 (19) | 9 (40.9) | 0.96 |
| *clbQ* | Toxin | 29 (61.7) | 41 (46.1) | 0.73 |  | 11 (52.4) | 9 (40.9) | 0.96 |
| *hlyC* | Toxin | 18 (38.3) | 44 (49.4) | 0.73 |  | 11 (52.4) | 8 (36.4) | 0.96 |
| *cnf1* | Toxin | 17 (36.2) | 28 (31.5) | 0.73 |  | 7 (33.3) | 7 (31.8) | 0.96 |
|  |  |  |  |  |  |  |  |  |
| Virulence score, median [IQR] | | 11 [8-12] | 11 [11-14] | <.01§ |  | 11 [8-13] | 9 [8-11] | 0.16§ |

\* Except when otherwise notified.

† Adjusted p value for the comparison of the 20 virulence factors within each subgroup of strains.

‡ Distinct alleles of the *papG* virulence gene.

§ Wilcoxon rank-sum test.

Table S2: Bacterial resistance to seven antibiotics among *E. coli* strains of the commensal and clinical collections according to the portal of entry (urinary- and digestive-sources, n=138 and n=60 in each collection, respectively)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Antibiotic classes** | **Antibiotics** |  | **Matched commensal and urinary-source strains** | | |  |  | **Matched commensal and digestive-source strains** |  |
|  | **n(%)** | | **Adjusted**  **p values\*** |  | **n(%)** | | **Adjusted**  **p values\*** |
|  | **Commensal**  **(n = 138)** | **Clinical**  **(n = 138)** |  | **Commensal**  **(n = 60)** | **Clinical**  **(n = 60)** |
| **Penicillins** | Amoxicillin |  | 43 (31.2) | 88 (63.8) | <0.001 |  | 17 (28.3) | 39 (65) | <0.001 |
|  | Amoxicillin – clavulanic acid |  | 21 (15.2) | 77 (55.8) | <0.001 |  | 11 (18.3) | 34 (56.7) | <0.001 |
|  |  |  |  |  |  |  |  |  |  |
| **Cephalosporins** | Cefoxitin |  | 0 (0.0) | 3 (2.2) | 0.49 |  | 0 (0.0) | 5 (8.3) | 0.17 |
|  | Cefotaxime |  | 1 (0.7) | 3 (2.2) | 0.62 |  | 1 (1.7) | 3 (5.0) | >.99 |
|  |  |  |  |  |  |  |  |  |  |
| **Aminoglycosides** | Amikacin |  | 0 (0.0) | 4 (2.9) | 0.37 |  | 0 (0.0) | 0 (0.0) | >.99 |
|  |  |  |  |  |  |  |  |  |  |
| **Sulfonamides** | Cotrimoxazole |  | 23 (16.7) | 54 (39.1) | <0.001 |  | 6 (10) | 24 (40) | <0.001 |
|  |  |  |  |  |  |  |  |  |  |
| **Quinolones** | Ofloxacin |  | 7 (5.1) | 23 (16.7) | 0.01 |  | 1 (1.7) | 14 (23.3) | 0.002 |

\* Adjusted p value for the comparison of the 7 antibiotic resistances within each subgroup of strains

Table S3: Clinical and epidemiological characteristics of the 243 patients of the COLIBAFI study according to the portal of entry of the bacteraemia

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | |  | **COLIBAFI n (%)\*** | | | **p values** |
|  | |  | **All**  **(n = 243)** | **Urinary-source**  **(n = 138)** | **Digestive-source**  **(n = 60)** |
| **Age, median [IQR]** | | | 61 [48-72] | 59 [47-73] | 62 [49-72] | 0.56 |
| **Sex** | **Male** | | 110 (45.3) | 41 (29.7) | 41 (68.3) | <0.001 |
|  | **Ratio M/F** | | 0.83 | 0.44 | 2.16 |  |
| **Nosocomial infection** | | | 58 (23.9) | 28 (20.3) | 21 (35.0) | 0.03 |
| **Death at 28 days** | | | 17 (7.0) | 5 (3.6) | 12 (20.0) | <0.001 |
| **Antibiotics within 2 weeks preceding bacteraemia** | | | 23 (9.7) | 9 (6.6) | 10 (17.5) | 0.04 |
| **Host predisposing conditions**† | | |  |  |  |  |
|  | | **Solid cancer** | 68 (28.3) | 20 (14.6) | 38 (64.4) | <0.001 |
|  | | **Malignant hemopathy** | 24 (10.0) | 6 (4.4) | 4 (6.8) | >.99 |
|  | | **Tobacco addiction** | 60 (25.0) | 24 (17.5) | 29 (49.2) | <0.001 |
|  | | **Diabetes mellitus** | 56 (23.3) | 24 (17.5) | 20 (33.9) | 0.13 |
|  | | **Chronic renal insufficiency** | 33 (13.8) | 20 (14.6) | 8 (13.6) | >.99 |
|  | | **Congestive heart failure** | 9 (3.8) | 6 (4.4) | 1 (1.7) | >.99 |
|  | | **Chronic alcoholism** | 34 (14.2) | 17 (12.4) | 13 (22.0) | 0.78 |
|  | | **Prior bacteraemia** | 23 (9.7) | 9 (6.6) | 10 (17.5) | 0.25 |
|  | | **Cirrhosis** | 16 (6.7) | 10 (7.3) | 4 (6.8) | >.99 |
|  | | **HIV infection** | 10 (4.2) | 6 (4.4) | 4 (6.8) | >.99 |
|  | | **Immunocompromise** | 111 (46.3) | 42 (30.7) | 43 (72.9) | <0.001 |

\* Except when otherwise notified

† Adjusted p-values by the Hochberg method