

Abolnik C, et al. Identification of bacteria in the tracheal swabs of farmed ostriches and their effect on the viability of influenza A virus

Supplemental Table 1. Clinical resistance breakpoints used for antimicrobial susceptibility tests.

Antibiotic	Dose	Resistant	Intermediate	Susceptible
Ampicillin	10 µg			
Enterobacteriaceae		13	14–16	17
Staphylococci		28	–	29
Enterococci		16	–	17
Ceftiofur	30 µg	17	18–20	21
Colistin sulphate	10 µg	<11	–	≥11
Doxycycline	30 µg			
Enterobacteriaceae		12	13–17	18
Enrofloxacin	15 µg	16	19–22	23
Erythromycin	15 µg			
<i>Staphylococcus & Enterococcus</i>		13	14–22	23
Streptococci		15	16–20	21
<i>Listeria</i>		<25		≥25
Fosfomycin	200 µg			
<i>E. coli</i>		≤24	–	≥24
Neomycin	10 µg			
Gram negatives		12	13–15	16
Kanamycin	30 µg	13	14–17	18
Sulfonamides	300 µg	12	13–16	17
Trimethoprim	25 µg	10	–	16
Tetracycline	30 µg			
Enterobacteriaceae		11	12–14	15
Staphylococci		17	18–22	23
Streptococci		≤18	19–22	≥23
Other		14	15–18	19

Supplemental Table 2. Effect of bacteria isolated from ostrich tracheal swabs on the viability of influenza A virus.

<i>Dietzia</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁴	0/6 (0/6)	0/6 (0/6)	6/6 (6/6)	– (–)	– (–)	– (–)
10 ⁻⁵	0/6 (0/6)	1/6 (0/6)	6/6 (6/6)	– (–)	– (–)	– (–)
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	3/6 (6/6)	3/6 (–)	– (–)	– (–)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	3/6 (4/6)	3/6 (2/6)	– (–)	– (–)
10 ⁻⁸	1/6 (0/6)	0/6 (1/6)	1/6 (4/6)	3/6 (1/6)	0/6 (–)	0/6 (–)
10 ⁻⁹	0/6 (0/6)	0/6 (1/6)	1/6 (0/6)	0/6 (4/6)	0/6 (1/6)	0/6 (–)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{9.25} (10 ^{9.25})						
<i>Corynebacterium</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	4/6 (6/6)	1/6 (–)	– (–)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	2/6 (2/6)	0/6 (0/6)	0/6 (1/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	1/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{7.40} (10 ^{7.88})						
<i>Rothia</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	1/6 (0/6)	0/6 (1/6)	0/6 (0/6)	0/6 (1/6)	0/6 (0/6)	4/6 (0/6)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (5/6)	0/6 (0/6)	5/6 (0/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	1/6 (0/6)
10 ⁻⁹	1/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.5} (10 ^{8.4})						
<i>Pseudomonas putida</i> (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	1/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (1/6)	0/5 (0/6)	4/5 (0/6)
10 ⁻⁷	0/5 (0/6)	2/5 (0/6)	0/5 (0/6)	0/5 (5/6)	0/5 (0/6)	3/5 (0/6)
10 ⁻⁸	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5(0/6)	2/5 (0/6)
10 ⁻⁹	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)
10 ⁻¹⁰	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)	0/5 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.16} (10 ^{8.4})						

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<i>Clostridium</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	5/6 (5/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁷	1/6 (0/6)	0/6 (0/6)	0/6 (0/6)	1/6 (1/6)	3/6 (0/6)	0/6 (1/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	1/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (1/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (1/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{7.7} (10 ^{7.5})						
<i>Streptococcus</i> sp. (equinus). (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁴	0/6 (ND)	0/6(ND)	0/6(ND)	0/6(ND)	0/6(ND)	3/3(ND)
10 ⁻⁵	0/6 (ND)	0/6(ND)	0/6(ND)	0/6(ND)	0/6(ND)	0/6(ND)
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (6/6)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (6/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{4.5} (10 ^{8.6})						
<i>Rhodotorula</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	2/6 (0/6)	4/6 (3/6)	– (2/6)	– (0/6)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	4/6 (5/6)	2/6 (0/6)	– (0/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.53} (10 ^{8.40})						
<i>Staphylococcus</i> sp. (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	2/6 (2/6)	0/6 (0/6)	0/6 (0/6)	3/6 (4/6)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (1/6)	0/6 (0/6)	0/6 (0/6)	3/6 (4/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	1/6 (1/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.36} (10 ^{8.75})						

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<i>Arthrobacter gandavensis</i> (control)		Chick embryo deaths				
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	3/6 (2/6)	0/6 (0/6)	0/6 (0/6)	2/6 (4/6)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	3/6 (1/6)	0/6 (0/6)	0/6 (0/6)	2/6 (4/6)
10 ⁻⁸	1/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (1/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.5} (10 ^{8.75})						
<i>Acinetobacter</i> sp. (control)		Chick embryo deaths				
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (6/6)	0/6 (-)	6/6 (-)	- (-)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	1/6 (1/6)	2/6 (0/6)	0/6 (2/6)	2/6 (2/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	1/6 (0/6)	1/6 (0/6)	0/6 (3/6)	1/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	1/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.76} (10 ^{8.88})						
<i>Streptomyces</i> sp. (control)		Chick embryo deaths				
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	2/6 (6/6)	4/6 (-)	- (-)	- (-)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (1/6)	2/6 (0/6)	2/6 (2/6)	0/6 (2/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	1/6 (0/6)	0/6 (0/6)	0/6 (3/6)	4/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{8.23} (10 ^{8.88})						
<i>Pantoea</i> sp. (control)		Chick embryo deaths				
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻³	0/6 (ND)	0/6 (ND)	6/0 (ND)	- (ND)	- (ND)	- (ND)
10 ⁻⁴	0/6 (ND)	0/6 (ND)	1/5 (ND)	0/6 (ND)	0/6 (ND)	1/6 (ND)
10 ⁻⁵	0/6 (ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (6/6)	0/6 (-)	0/6 (-)	0/6 (-)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (1/6)	0/6(3/6)	0/6 (2/6)	0/6 (2/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (3/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{5.25} (10 ^{8.88})						

Identification of bacteria in ostrich tracheal swabs

<i>Citrobacter freundii</i> (control)	Chick embryo deaths					
Virus titration	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
10 ⁻³	0/6 (ND)	0/6 (ND)	2/6 (ND)	0/6 (ND)	0/6 (ND)	4/6 (ND)
10 ⁻⁴	0/6 (ND)	0/6 ((ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)	3/6 (ND)
10 ⁻⁵	0/6 (ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)	0/6 (ND)	3/6 (ND)
10 ⁻⁶	0/6 (0/6)	0/6 (0/6)	0/6 (6/6)	0/6 (-)	0/6 (-)	0/6 (-)
10 ⁻⁷	0/6 (0/6)	0/6 (0/6)	0/6 (1/6)	0/6(3/6)	0/6 (2/6)	0/6 (2/6)
10 ⁻⁸	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (3/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻⁹	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
10 ⁻¹⁰	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)	0/6 (0/6)
Final EID ₅₀ titer per 0.2 mL = 10 ^{5.33} (10 ^{8.88})						

– = all eggs dead; ND = not done.