**SUPPLEMENTAL MATERIAL**

**Nebulized bacteriophages for prophylaxis of experimental ventilator associated pneumonia due to methicillin-resistant *Staphylococcus aureus***

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**Running title.** Phage prophylaxis for pneumonia

|  |  |  |
| --- | --- | --- |
| **Observation** | **Details** | **Scorea** |
| **Attitude** | BAR (bright/active/responsive) | 0.0 |
|   | Burrowing or hiding, quiet but rouses when touched | 0.1 |
|   | Markedly diminished exploratory activity when assessed for neurobehavioral score, vocalizes or aggressive when touched | 0.4 |
| **Porphyrins** | None | 0.0 |
|  | Mild around eyes and/or nostrils | 0.1 |
|   | Obvious on face and/or paws | 0.4 |
| **Gait and Posture** | Normal | 0.0 |
|  | Mild incoordination when stimulated, hunched posture, mild piloerection | 0.1 |
|   | Obvious ataxia or head tilt, hunching, drags one or both limbs, severe piloerection | 0.4 |
| **Weight** | Weight gain or weight loss < 5% | 0.0 |
|   | Weight loss 5 – 10 % | 0.1 |
|   | Weight loss > 10 % | 0.4 |

**Supplemental Table 1**. Animal welfare scoring system (1).

a Animals were euthanized if the score was >1 or if weight changed by >20%.

|  |  |  |
| --- | --- | --- |
| **Observation** | **Details** | **Scorea** |
| **Largest focus of Inflammation** | None | 0 |
|   | Small (<1/2 of the area of a low power field [40x magnification]) | 1 |
|   | Medium (1/2 ≥ but < 1 of the area of low power field [40x magnification]) | 2 |
|  | Large (the entire low power field) | 3 |
| **Distribution and extent of lesions**  | None | 0 |
|   | Mild (<10% of the sample) | 1 |
|  | Moderate (10-50% of the sample) | 2 |
|  | Severe (>50% of the sample) | 3 |
| **Necrosis** | None | 0 |
|  | Mild (<10% of the sample) | 1 |
|   | Moderate (10-50% of the sample) | 2 |
|   | Severe (>50% of the sample) | 3 |
| **Colonies** | None | 0 |
|  | Single | 1 |
|  | Multifocal | 2 |
| **TOTAL**  |  | **11** |

**Supplemental Table 2.** Histopathological scoring system for lung tissue (2).

a Scoring was performed by a European Board certified veterinary pathologist (S.S).

**References**

1. Prazak J, Iten M, Cameron DR, et al. Bacteriophages Improve Outcomes in Experimental Staphylococcus aureus Ventilator-associated Pneumonia. American journal of respiratory and critical care medicine 2019;200(9):1126-1133.

2. Montgomery CP, Boyle-Vavra S, Adem PV, et al. Comparison of virulence in community-associated methicillin-resistant Staphylococcus aureus pulsotypes USA300 and USA400 in a rat model of pneumonia. The Journal of infectious diseases 2008;198(4):561-570.