



## Theme 5. Immunology of viral diseases

### 016 - Essential oils able to completely inhibit the avian coronavirus replication

Cintia H Okino<sup>1</sup>, Gláucia R Melito<sup>1</sup>, Marcos D Ferreira<sup>2</sup>

<sup>1</sup>Embrapa Pecuária Sudeste, São Carlos, Brazil. <sup>2</sup>Embrapa Instrumentação, São Carlos, Brazil

Background: Avian coronavirus (AvCov) genome is well known to be highly prone to undergo mutations, leading to changes on amino acid sequences of the major structural AvCov proteins, especially in the spike (S) glycoprotein. Since the S protein is involved on the virus attachment to the host receptors and the most important neutralizing epitopes, mutations in this gene could result in antigenic changes and emergence of AvCov variants. The constant arising of new AvCov variants is pointed out as the main cause of worldwide vaccine failures in the field. Therefore, we aimed to explore alternative methods of controlling AvCov that could potentially be effective across all AvCov strains. Since essential oils (EO) from botanicals has been reported for a number of viruses, they were here investigated.

Method: *Syzygium aromaticum* and *Cymbopogon martin* were tested under different concentrations for toxicity evaluation on embryonated chicken eggs. The EOs dilutions of 1% and 0.1% were incubated during 30 minutes with H120 strain of AvCov, and inoculated in embryonated chicken eggs Specific Pathogen Free. A fixed viral titer of 101.54 EID<sub>50</sub> were administered per egg. The inoculated eggs were daily observed during seven days, and the chorion allantoic liquid (CA) was harvest for absolute quantification of AvCov RNA by RT-qPCR. The experiment was performed three times.

Results: The 1% dilution of both EOs was able to completely inhibit the viral replication, presenting no embryo lesions or RNA virus detection in the CA, while the 0.1% dilution presented a partial to absent inhibition of virus replication, presenting embryo lesions and RNA virus detection on the CA.

Conclusion: This is the first report to demonstrate antiviral activity of *Syzygium aromaticum* and *Cymbopogon martin* EOs. Further experiments are required to prove same effect in chickens.

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### 056 - Different macrophage polarization patterns induced by porcine reproductive and respiratory syndrome viruses (PRRSV)

Teerawut Nedumpun<sup>1</sup>, Chaitawat Sirisereewan<sup>2</sup>, Navapon Techakriengkrai<sup>1</sup>, Sanipa Suradhat<sup>1</sup>

<sup>1</sup>Department of Veterinary Microbiology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok, Thailand. <sup>2</sup>Graduate program in Veterinary Pathobiology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok, Thailand

Diverse genetic variation is a distinctive characteristic of porcine reproductive and respiratory syndrome virus (PRRSV). Infections with different PRRSV strains result in varied clinical outcomes and disease severity. The highly pathogenic (HP)-PRRSV induces extensive inflammatory responses, while the PRRSV-1 (EU) and PRRSV-2 (US) viruses are usually associated with immunosuppression and secondary complications. The ability of PRRSV to target macrophages plays a crucial role in its immunopathogenesis. Macrophages can exhibit two distinct polarization states, known as M1 and M2, which allow them to facilitate different pattern of immunological cascades. M1 macrophages are involved in inflammatory responses, whereas M2 macrophages contribute to immunosuppressive functions. We hypothesized that different strains of PRRSV might induce