Abstract form VSD 2016 Basics and Beyond

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Title Abstract: **Effects of hatching system on respiratory innate immunity in commercial broiler chickens**

In recent years, on-farm hatching systems for broiler chickens have been developed and brought into use. Chickens hatched on-farm show growth and health advantages compared to chickens from hatcheries. Mechanisms behind these differences are believed to be the early access to food and water, transport and handling and the concentration of dust and pathogens in the hatching environment. Most research has focused on the differences in development of the gastrointestinal tract from chicks in the two hatching systems, but knowledge about the effect on the respiratory tract and its immune system is lacking. A large study (Robust Broilers 4 Healthy Humans) was set up to thoroughly investigate the influence of hatching circumstances on a large set of health and behavioural parameters. Multiple farms with both and on-farm hatching stable and a conventional stable were followed. As part of this study, samples of respiratory tissues (lung, thoracal airsacs and trachea) were collected at day-of-hatch (d0) and day 35. Cryosections from these tissues were stained with antibodies against monocytes/macrophages (α-KUL01) and heterophils (α-CATH-2) and the numbers of these cells were evaluated. In samples from d0, no significant differences were found between on-farm and conventional hatching, though a trend towards lower macrophage numbers was seen in airsacs and trachea of on-farm hatched chicks. At day 35, heterophil numbers were significantly lower in lung and airsacs of animals from the on-farm hatched stables, while no differences were found in the trachea. Macrophage numbers in the lung still showed a trend towards decrease at this timepoint. In conclusion, it is clear hatching environment of broiler chickens can affect respiratory innate immunity for a significant part of a broiler chicken's lifespan. This might potentially have an effect on resistance to infectious diseases.

Word count: 286

Offering: Immunohistochemistry experience in both frozen and FFPE tissues

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