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## **Efficacy of a new carvacrol-based product on Campylobacter jejuni in challenge test in vivo and impact on the whole caecal microbiota**

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6<sup>th</sup>

INTERNATIONAL  
CONFERENCE  
ON POULTRY  
INTESTINAL  
HEALTH



With 128 submitted scientific abstracts and over 700 registered participants, the organizing committee is excited to host academics and poultry industry professionals at the 6th Edition of the International Conference on Poultry Intestinal Health, held in Rome, Italy from 3rd to 5th April 2019.

The backbone for a diverse program are the internationally renowned keynote speakers: **Joël Doré** (*INRA, France*), **Lisa Williams** (*Swansea University, UK*), **Mark Stevens** (*The Roslin Institute at the University of Edinburgh, UK*), **Sam P. Brown** (*Georgia Tech, USA*), **Michael Hess** (*University of Vienna, Austria*), **Adrian Smith** (*University of Oxford, UK*), **Steven C. Ricke** (*University of Arkansas, US*), **Ilias Kyriazakis** (*Newcastle University, UK*), **Filip Van Immerseel** (*Ghent University, Belgium*) and **Maarten De Gussem** (*Vetworks, Belgium*). In addition, 27 short communication presenters that show their latest findings, 29 3-minute pitch presentations and 98 poster presenters, make this event the biggest conference edition since its launch in 2013 in Ghent, Belgium. The speakers will bring updates on novel scientific findings in various domains of gut health research, and timely findings and data with practical relevance to the poultry industry in its broadest sense.

As in previous editions, the 'One World, One Health' concept, which recognizes that human health is interconnected to the health of animals and the environment, still has its central role in the conference. Humans and animals interact with greater frequency and intimacy in a globalized world. These interactions increase the risk of the emergence and spread of disease agents that could adversely impact health, whether human or both. Today, poultry production is essential in providing affordable protein and has a relatively low ecological footprint. Despite this, one needs to be aware of animal health, animal welfare, food safety, food security, public perception, trade implications, and market-access aspects if we want to improve poultry production. All over the world, innovative solutions in developing alternatives to antibiotics and gut health diagnostics require a thorough knowledge of the interaction between the microbiota and the host cells of the chicken gut, and this is influenced by nutrition. The conference wants to bring the attendants up to date with this knowledge and creates a platform for innovation. To open the conference for a variety of topics, we choose to divide the program in sessions that will cover the most important topics in poultry gut health, being: Gut health diagnostics, Foodborne pathogens, Pathogenesis of intestinal disease, Parasitic diseases of poultry, Immunity, Nutrition and feed additives to control gut health and Novel feed ingredients on Gut Health.

We hope to have succeeded in creating a science-based conference that has satisfied the audience and want to thank speakers, sponsors and all attendants to take part in the exciting discussions and interactions.

Enjoy the conference!

*Filip Van Immerseel and Maarten De Gussem, organizers of the conference.*

Dates: **3-5 April, 2019**  
Venue: **Auditorium Del Massimo**  
Via Massimiliano Massimo, 1  
00144 Roma, Italy

Website: [www.ihsig.com](http://www.ihsig.com)  
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# Efficacy of a new carvacrol-based product on *Campylobacter jejuni* in challenge test *in vivo* and impact on the whole caecal microbiota

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## The Problem

*Campylobacter* is the leading cause of food-borne diarrheal disease worldwide, with *Campylobacter jejuni* and *Campylobacter coli* representing the most frequently involved species. The main source of infection is the meat from poultry origin mostly contaminated during evisceration at slaughterhouse. Thus, reducing *Campylobacter* concentrations in the intestinal tract and particularly in the caeca may help decreasing flesh contamination, and in this way reducing human infections by the bacteria. Oral administration of carvacrol could be a promising method to reduce *Campylobacter* in digestive tract but this compound is absorbed proximally in the blood system, so it does not get to the sites of *Campylobacter* growth which are the caeca.

## How we investigated or researched the problem

A new solid galenic (Phodé, France) has been created to control the release of the carvacrol. In the present study, the efficacy of this formulation (2.5 kg per T of feed) in decreasing the *C. jejuni* caecal load in broiler chickens artificially inoculated ( $10^8$  CFU/chicken) at 21 days is evaluated. The 16S rDNA sequencing allows us to study the impact of both artificial inoculation and addition of the formulation to the feed on the whole caecal microbiota. This study is conducted on 3 groups of chickens, one non-inoculated and untreated, one inoculated and untreated and one inoculated and treated. Samples are taken on 25, 31 and 35 days old chicken.

## Results

The formulation significantly decreases the *C. jejuni* load by 1.5 log in comparison with the inoculated and non-treated control ( $P < 0.05$ ). The sequencing results show, at phyla level, an increase of the Firmicutes proportion with age in the non-inoculated and untreated group. When animals are inoculated but non-treated, this proportion is stable regardless of age. In the inoculated and treated animals, a restoration of the phenomenon observed in the non-inoculated untreated group is observed. The addition of the formulation to the feed significantly increases ( $P < 0.05$ ) the richness and diversity of the microbiota compared to the samples of the two untreated groups. It also modifies the proportion of 9 families and 18 genera of the caecal microbiota.

## Implications / Conclusions

The results show that this formulation of carvacrol modifies the caecal microbiota and limits the growth of *C. jejuni* under artificial inoculation conditions.