

First ID4FEED conference in Bangkok

As part of the VIV-ASIA 2019, ID4FEED organized its first conference in Bangkok on March 12nd on the topic « Innovation in phytogetic development in animal feed ». A good opportunity to present its team members, its projects, of which the recent acquisition of the Valréas eco-extraction platform PEEV near Avignon (France) which will allow the company to offer further innovative phytogetics development tools.

François GAUTIER introducing the conference



In his introduction, François GAUTIER, Managing Director of ID4FEED, reminds that antibiotics resistance may become a global major health problem if nothing is done, causing 10 million deaths every year by 2050, more than cancer. « The animal feed industry is working hard to find some solutions », says François GAUTIER. Plant-based products can be an interesting alternative to antibiotics and, following a Biomin 2018 market study, more than 50 % of customers questioned answered that they were using phytogetic feed additives, with the highest rate in Asia at 65 %.

« Our feed supplements are induced plants coming from our own research, combined with other phytogetic products such as plant extracts », precises François GAUTIER who adds : « ID4FEED unique technology consists in applying a stress to plants to induce the production of specific metabolites of defence (Phytoalexins = plant defence metabolites) and keep as much as possible the full metabolome of the plant produced during this stress ».

MORE EFFICIENT PLANT EXTRACTS

« Plant metabolome consists in the whole primary and secondary metabolites (*organic molecules*) found in an organism », says then Dr Camille ROZIER, ID4FEED R&D Manager in a presentation about the usage of plant and plant extracts in animal nutrition. Plant secondary metabolites have different biological activities on animal functions (*immuno-stimulant, anti-inflammatory, antimicrobial...*) and plant breeding is a way to increase yield, quality and quantity of plant nutrients and secondary metabolites and then plant biological activities. « A plant extract is a complex substance obtained from the extraction of a whole plant or a

specific compartment (*primary/secondary metabolites*) and a wide range of extraction processes exists », precises then Camille ROZIER who concludes : « Plant extracts could contain more than 300 metabolites (*major and minor*) and plant extracts used in combination is a way to solve problem of antibiotic-resistant bacteria (*E. coli, S. aureus, S. faecalis...*) ».

ID4FEED has developed several partnerships (*University of Avignon and Lyon in France or University of Queretaro in Mexico*) in order to create analytical tools (*such as metabolomics*) to better understand and optimize plant elicitation technologies.

CAPCIN, A UNIQUE PRODUCT

Dr Michel MAGNIN, R&D and Technical Director ID4FEED, presents then ID PHYT CAPCIN, the first phytogetic product coming from an induced plant. ID PHYT CAPCIN range consists of an induced chilli powder (*Capsicum*) that naturally contains active substances (*capsaicinoids*) effective against inflammation and/or heat stress. « ID PHYT CAPCIN is unique by the origin of the plant, the technological treatments which are applied along the production chain and the research program which is developed by ID4FEED », says Michel MAGNIN. Thanks to a patented ID4FEED elicitation technology, ID PHYT CAPCIN is enriched in active molecules called phytoalexins, or secondary metabolites of the plant with low molecular weight, which don't play a direct role in the plant growth but which interact with the environment. Another originality of ID PHYT CAPCIN is to keep all the active compounds as there is no extraction and a special encapsulation of capsaicinoids. « Among all phytoalexins produced by the pepper some of them are known for their positive effects in animals, and among other metabolites, chilli pepper contains a large spectrum of antioxidants like phenols or flavonoids », concludes Michel MAGNIN. A nice arsenal of extracts to slow down the oxido-inflammatory cycle of farm animals.



RESEARCH WORK IN THAILAND

Dr Kanokporn POUNGPONG from Kasetsart University Bangkok presented then Capsicum trials in Thailand on broilers and pigs. Trials made by Kasetsart University in 2005 showed a significative effect of Capsicum extract on enzyme activity of broilers. Capsicum extract also showed numerical improvement of feed conversion ratio and carcass quality of piglets.



Another recent trial made in 2018 showed that Capsicum extract (*Capsaicin, CS 2.5 ppm*) supplementation increased the villus height of duodenal intestine in nursery pigs. « Capsicum extract with liquid Methionine (*LMA*) in diets significantly decreased lymphocyte compared with control group », says Dr Kanokporn POUNGPONG who adds that Capsicum extract with LMA can increased population of domain bacteria and Lactobacillus sp. in caecum of weaning pigs. Then the speaker presented several poultry trials made by the Bangkok Animal Research Center and showing numerous interest of Capcin (that due to its specific technology of induction, developed by ID4FEED, which is very different from standard Capsicum extracts) : on nutrient uptake of broilers (*Capcin could improve dietary AME in broilers fed reduced AME diet*), on nutrient retention (*Capcin could improve crude protein retention in broilers fed reduced AME diet*) or on performance of broilers under stress conditions (*Capsicum providing 1 ppm of capsaicinoids, showed significantly improvement of growth performance of broilers under multi-stressors condition*). « We will go on our trials and research in the future with lower amount of Capsicum », concludes Dr Kanokporn POUNGPONG.

CAPCIN IN SWINE

Two presentations were made on Capcin usage in swine. « Capcin has three main ways of action », reminds Michel MAGNIN : stimulation of digestive enzymes secretion, stimulation of feed intake and limitation of the oxido-inflammatory response when animals are exposed to stress or to disease. At gut level, capsaicinoids enable to decrease the inflammatory response and the gut permeability ("leaky" gut), leading to less inflammation, less metabolic stress and better performances.

In his presentation on sow trials in Brazil, John WHITEHEAD concludes that the use of Capcin as an additive to lactating sows was effective for growth and piglet weight (*individual and total litter*) for the trial 1 made on 44 females (*370 g per piglet difference at weaning, 6.9 Kg per litter difference at weaning*). A second trial made on higher number of sows (*two sites in the same farm with 120 females in the farm 1, 160 in the farm 2*) also confirmed the positive effect of Capcin on piglet growth specially when there is a challenge or stressed conditions (*like a sanitary pressure*).

John WHITEHEAD also presented the results of a third pig trial made in UK (2017) with 10, 000 sows in operation and showing that the use of Capcin at 200 g/Mt improved liveweight gain by over 3% and increased feed intake by over 4% with an increase of FCR. « There is a particular interest of Capcin when increased growth rates are required especially increased margin per pig place », concludes the speaker.



NEW PERSPECTIVES

In her presentation on « New perspective in phytogetic development», Camille ROZIER reminds first the limits of plant extract utilization. Composition variability is linked to intrinsic factors (*botanical identity, chemotype, plant growth cycle and physiological stage*) and extrinsic factors (*environment, agricultural practices, extraction process, conditions and time of storage*). « From the same plant, different extracts and secondary metabolites can be obtained depending on the extraction method », says Camille ROZIER who adds : « Some antagonist effects can occur, and we have to understand what happens ». Then Camille explains her partnership work made with the University of Lyon on metabolomics whose results will be presented in May 2019 at the RFMF (*metabolomics and fluxomics*) meeting in Clermont-Ferrand, France. Camille presents then the different existing encapsulation processes, with the diversity in encapsulation matrices.

« Encapsulation has different roles and we work in partnership with the Green team lab (*University of Avignon*) to find new processes of eco-extraction using alternative solvents and valorizing co-products extraction », completes Camille ROZIER.

« The acquisition of the Valréas eco-extraction platform PEEV (*Provence region*) represents a key step in the development of ID4FEED which plans to invest € 1.2 million in 2019 to develop innovative eco-extraction technologies for the feed industry, covering the entire spectrum from the plant through to studying the behavior of these extracts in the digestive tract of animals», says in conclusion François GAUTIER who adds that the new platform will allow the company to serve industries as varied as animal nutrition, fine chemicals, pharmacy and cosmetics.