

Effect of plant-derived product supplementation on sow and piglet physiologyL. Herve¹, H. Quesnel¹, A. Greuter², L. Hugonin² and N. Le Floc 'h¹¹PEGASE, INRAE, Institut Agro, Le Clos, 35590 Saint-Gilles, France, ²IDENA, Rue du Moulin, 44880 Sautron, France; lucile.herve@inrae.fr

Early and abrupt weaning is a critical period for piglets with a high prevalence of digestive disorders. Plant-derived products are potential alternatives to antibiotics to prevent and treat post-weaning diarrhoea through their antioxidant, anti-inflammatory or anti-bacterial properties. The study aimed to investigate the effects of plant-derived product supplementation on sow and piglet physiology during lactation and around weaning. Sixty-four sows were assigned to control or extract treatment. Extract sows were supplemented with 25 g/d of plant extract supplied in feed from day of gestation (DG) 106 to day of lactation (DL) 28 and received 20 ml of a mixture of essential oils on DG109. Within each sow group, 2 ml of a mixture of essential oils (EO) was orally administered to all the piglets of 1 litter out of 2 at DL3. Piglets were weaned on DL28. Blood samples were collected from sows on DG94, DG112 and DL26 and from 2 piglets per litter on DL25 and 5 d post-weaning (PW5) for the analyses of blood cell count, plasma metabolites and inflammatory (haptoglobin) and oxidative (oxidative products, dROM, and antioxidant capacity, BAP) status indicators. Colostrum and milk samples were collected at farrowing and at DL6 and 26. Extract treatment had no effect on sow metabolic, inflammatory and oxidative status or nutritional composition of colostrum and milk at DL6 ($P>0.10$). However, it decreased the number of lymphocytes in sow blood at DG112 ($P<0.05$). It also tended to decrease dry matter and gross energy ($P<0.10$) and reduced haptoglobin concentration ($P<0.01$) in milk at DL26. The EO treatment increased the average daily gain of piglets from DL6 to weaning ($P<0.05$), regardless of sow treatment. In piglet blood at DL25, EO tended to increase the lymphocytes proportion ($P<0.10$), decreased the granulocytes proportion ($P<0.05$) and tended to decrease the oxidative stress index ($OSI=dROM/BAP$, $P=0.06$). Piglet OSI and blood concentrations of haptoglobin and leukocytes were increased by weaning but not affected by sow or piglet treatments. Plant-derived products could thus modify the mammary secretions composition and health status of piglets before weaning. This study was financially supported by the Pays de la Loire region.

Effect of extracted olive oil wastewater in post weaning phase on infected pigletsM.R. Mellino¹, C. Ollagnier², N. Pradervand², G. Bee² and G. Battacone¹¹University of Sassari, Department of Agraria, Viale Italia 39, 07100, Italy, ²Agroscope, Posieux, 1725, Switzerland; mrmellino@uniss.it

Weaning is often connected to impaired health status of piglets. Various environmental stress factors favour colonization of enterotoxigenic *Escherichia coli* (ETEC) in the gastrointestinal tract and cause life-threatening diarrheal disease also known as post weaning diarrhoea (PWD). The aim of this study was to evaluate the effect of olive oil wastewater (OOW), known to contain antimicrobial bioactive compounds, in weaned piglets infected with ETEC F4. A total of 64 Swiss Large White piglets (weaned at 25 d, 26 d or 27 d of age, 7.83 ± 1.35 kg of weight) were randomly assigned to two dietary treatments (control = control diet + 0% OOW; OOW = control diet + 2% OOW) balanced for litters, sex, body weight, age of weaning (AW) and ETEC F4 susceptibility (S/S and S/R genotype). The body weight (BW), average daily gain (ADG), were recorded on day 1, 5, 7 and 12 post weaning, faecal score (fs) and colony forming unit of ETEC (cfu) were observed after infection (5th day from start to study) on 5, 6, 7, 8 and 9 day post weaning. The data were analysed using a model with repeated measure contemplating dietary treatments. The BW, ADG, fs and cfu were not influenced by the OOW inclusion ($P>0.6$). All traits were affected by the AW ($P<0.02$): younger piglets grew slower, were lighter, had greater cfu values but lower fs than older piglets. Regardless of the dietary treatment, the piglets of the S/S had higher cfu values ($P<0.01$) than those of the S/R genotype (10.9 vs 9.4 log cfu). These results highlight the impact of age at weaning and the genotype of piglets on the assessed traits. However, supplementing the starter diet with 2% OOW did not alleviate the ETEC challenge.