



## ASPA 25th Congress Book of Abstract

Pasquale De Palo

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## Italian Journal of Animal Science

The *Italian Journal of Animal Science* is an international peer-reviewed open access journal publishing original scientific papers, reviews and short communications.

The journal serves as essential reading for animal scientists, technicians and all those who research animal production.

The journal encourages submissions of international relevance on the following subjects:

- Animal derived food quality and safety
- Animal genetics and breeding
- Aquaculture, poultry, companion and wild game animals
- Livestock systems, management and environment
- Non-ruminant or ruminant nutrition and feeding
- Production physiology and functional biology of farmed, companions and wild game animals.
- Animal behavior
- Animal welfare
- In vitro studies that have an application to farmed livestock

Manuscripts must address topics based on research at molecular, cellular, organ, whole animal and production system levels. Manuscripts discussing milk or meat analysis and compositions must show a direct link to either livestock production system, product quality, animal feeding/nutrition, animal genetics or breeding. Manuscripts describing laboratory animal models will be considered where the study highlights a potential benefit to farmed livestock.

Submissions discussing epidemiology, parasitology, infective diseases, food-borne diseases do not fit with the aims and scope of the journal.

Meeting reviews, book reviews and conference supplements are also published, as well as news and guidelines from the Animal Science and Production Association (ASPA). We welcome submissions from ASPA members and non-members alike.

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# Italian Journal of Animal Science

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## ASPA 25<sup>th</sup> Congress

*Monopoli (BARI - ITALY), June 13-16, 2023*

### *Guest Editors*

**D'Alessandro Angela Gabriella, De Palo Pasquale, Maggiolino Aristide,  
Mele Marcello**

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# **ASPA 25<sup>th</sup> Congress**

## ***Monopoli (BARI - ITALY), June 13-16, 2023***

**#ASPA2023**

### **ASPA 25<sup>th</sup> Congress Book of Abstract**

**The 25th congress of the Animal Science and Production Association**

**“Animal Production Science: Innovations and sustainability for future generation” is under patronage of Loghi patrocini**

**Monopoli (BARI - ITALY),  
June 13-16, 2023**

#### **Venue**

**Torre Cintola Natural Sea Emotions**

**Località Capitolo - Monopoli (BARI - ITALY)**



## The 25<sup>th</sup> Congress of the Animal Science and Production Association “Animal Production Science: Innovations and Sustainability for Future Generation”

Under the auspices of



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The 25<sup>th</sup> Congress of the Animal Science and Production Association (ASPA) is hosted in Monopoli (Puglia) by the University of Bari.

The Congress is entitled "Animal Production Science: innovations and sustainability for future generations" and returns to Puglia after its second edition which was held in Bari 47 years ago.

The congress is hosted at the charming Torre Cintola resort in Monopoli (Bari) from the 13<sup>th</sup> to the 16<sup>th</sup> June 2023, a special location also for celebrating the 50<sup>th</sup> anniversary of our association.

This edition of the ASPA congress has received a total of 467 scientific contributions: 297 oral presentations and 170 posters have been selected. This is a very great result! The highest number of contributions of ever, according to our best knowledge. Moreover, 24 invited lectures will be presented.

The congress has implemented concrete actions for improving its sustainability, like the dematerialization of the posters (available through a smartphone app and on touch screen desks), the increasing of the use of public transportations, the donation of leftover food to charities, as well as the increased use of zero-mile food. Moreover, the Congress opens a focus also on the role of women in Science, dedicating the congress rooms to neglected scientists poorly celebrated but fundamental for the progress of knowledge and societal development. Finally, a disseminated photo exhibition in the Congress rooms on Marginal Areas is a further opportunity for attendees to deepen the knowledge of Southern Italy landscapes and their relationships with livestock industry.

The scientific program is enriched by 23 main lectures, covering all the main topics. Many thanks for the job to the President of the Organizing Committee, Prof. Pasquale De Palo, and to all the components. I also wish to thank all the members of the Scientific Committee, starting from the President Prof. Angela Gabriella D'Alessandro.

I would like to congratulate and to thank all people that have contributed to the organization of the meeting and that have collaborated in reviewing the summaries. A special thanks to them for what they have done for ASPA and for the Italian Animal Science. A special thank also to Prof. Marcello Mele, Editor-in-Chief of the Italian Journal of Animal Science, for having contributed to the edition of the proceedings.

Nicolò Pietro Paolo Macciotta  
ASPA President



# **ASPA 25<sup>th</sup> Congress**

## ***Monopoli (BARI - ITALY), June 13-16, 2023***

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## Program at a glance

**Tuesday June 13<sup>th</sup>**



	Room Daunia	Room Peucetia	Room Messapia	Room Apulia
	<b>14:30-17:00</b> <b>Chicken biodiversity</b> <i>Session 01</i>  Invited: <b>Cerolini Silvia</b> Chairs: <b>Iaffaldano N., Schiavone A.</b>	<b>14:30-16:00</b> <b>Environmental footprint</b> <i>Session 02</i>  Chairs: <b>Sevi A., Zucali M.E.</b>	<b>14:30-16:30</b> <b>Advances in dietary feed supplementation</b> <i>Session 03</i>  Chairs: <b>Calabrò S., De Palo P.</b>	/
<b>17:00 – 17:30</b>	<i>Coffee break</i>			
	/	/	/	<b>Opening Ceremony</b>
<b>20:00</b>	<i>Welcome cocktail</i>			

## Opening Ceremony

Chairs: **Nicolò Pietro Paolo Macciotta, Giuseppe Pulina**

<b>17:30</b>	Institutional Addresses
<b>18:00</b>	Book launch and presentation "Carni e salumi: le nuove frontiere della sostenibilità" by Bernardi E., Capri E., Pulina G., Franco Angeli Ed. <b>Giuseppe Pulina</b> <i>President of "Carni sostenibili" Association and Full Professor of "Livestock farming ethics and sustainability" University of Sassari</i>
<b>18:15</b>	Policies and perspectives of European livestock industry; which role is played by the Animal Science Community? <b>Paolo De Castro</b> <i>Member of the EU Committee on Agriculture and Rural Development and Professor of Agricultural Economics</i>
<b>18:45</b>	National Policies and future perspectives for livestock and animal food supply chain in Italy: is there a role for Animal Science Community? <b>Giuseppe Blasi</b> <i>Head of Department of European and International Policies and Rural Development, Ministry of Agriculture, Food Sovereignty and Forestry</i>
<b>19:15</b>	ASPA and its first 50 years <b>Nicolò Pietro Paolo Macciotta</b> <i>ASPA President</i>
<b>20:00</b>	<b>Official Opening of the 25<sup>th</sup> ASPA Congress</b>

## Wednesday June 14<sup>th</sup>

	Room Daunia	Room Peucetia	Room Messapia	Room Apulia
	<p>08:15 - 11:00 <b>Environmental footprint</b> Session 04</p>  <p>Invited: <b>Kuipers Abele</b> Chairs: <b>Bernabucci U., Sepe L.</b></p>	<p>08:30 - 11:00 <b>Advances in dietary feed supplementation</b> Session 05</p>  <p>Invited: <b>Salem Abdelfattah Z.</b> Chairs: <b>D'Alessandro A.G., Formigoni A.</b></p>	<p>08:30 - 11:00 <b>Precision livestock farming: production efficiency in dairy cows</b> Session 06</p>  <p>Invited: <b>Giordano Julio O.</b> Chairs: <b>Abeni F., Pugliese C.</b></p>	<p>08:30 - 11:00 <b>Development of genomics in biodiversity</b> Session 07</p> <p>Invited: <b>Hanotte Olivier</b> Chairs: <b>Cecchinato A., Ciani E.</b></p>
11:00 - 11:30	Coffee break			
	<p>11:30 - 13:30 <b>Environmental footprint</b> Session 08</p> <p>Chairs: <b>Claps S., Sandrucci A.</b></p>	<p>11:30 - 13:30 <b>Sustainable feeding strategies in livestock systems</b> Session 09</p>  <p>Chairs: <b>Bonanno A., Tufarelli V.</b></p>	<p>11:30 - 13:30 <b>Animal welfare and health</b> Session 10</p>  <p>Invited: <b>Chebel Ricardo C.</b> Chairs: <b>Trevisi E., Gottardo F.</b></p>	<p>11:30 - 13:45 <b>Advances in meat quality</b> Session 11</p>  <p>Invited: <b>Gagaoua Mohammed</b> Chairs: <b>Marino R., Mele M.</b></p>
13:30 - 14:30	Lunch			
	<p>14:30 - 16:30 <b>Advances in rabbit and poultry products</b> Session 12</p> <p>Chairs: <b>Maiorano G., Trocino A.</b></p>	<p>14:30 - 16:15 <b>Genomic tools for ruminant resiliency</b> Session 13</p> <p>Invited: <b>Miglior Filippo</b> Chairs: <b>Pilla F., Crepaldi P.</b></p>	<p>14:30 - 16:30 <b>Heat stress and climate resilience in livestock</b> Session 14</p> <p>Invited: <b>Dahl Geoffrey E.</b> Chairs: <b>Braghieri A., Cozzi G.</b></p>	<p>14:30 - 16:30 <b>Metagenomic approaches in animal science</b> Session 15</p> <p>Invited: <b>Laurenco Jeferson Menezes</b> Chairs: <b>Trevisi P., Castiglioni B.</b></p>
16:30 - 17:00	Coffee break			
	<p>17:00 - 18:30 <b>New perspective in bees' production</b> Session 16</p> <p>Chairs: <b>Fontanesi L., Minozzi G.</b></p>	<p>17:00 - 18:05 <b>Breeding for our future</b> Session 17</p>  <p>Invited: <b>Cassandro Martino</b> Chairs: <b>Campanile G., Martelli G.</b></p>	<p>17:00 - 19:30 <b>Advances in meat quality</b> Session 18</p> <p>Chairs: <b>De Marchi M., Serra A.</b></p>	<p>17:00 - 18:30 <b>Metagenomic approaches in animal science</b> Session 19</p> <p>Chairs: <b>Buccioni A., Conte G.</b></p>
20:30	Typical Dinner			

## Thursday June 15<sup>th</sup>

	Room Daunia	Room Peucetia	Room Messapia	Room Apulia
	<p><b>08:30 - 10:30</b> Animal welfare and health <i>Session 20</i></p> <p>Chairs: Albenzio M., Tarantola M.</p>	<p><b>08:15 - 11:00</b> Sustainability and innovation in aquaculture <i>Session 21</i></p> <p>Chairs: Centoducati G., Parisi G.</p>	<p><b>08:15-11:15</b> Advances in milk and dairy products quality <i>Session 22</i></p> <p>Chairs: Di Trana A.C., Martini M.</p>	<p><b>08:15 - 11:00</b> New paradigms in animal breeding <i>Session 23</i></p> <p>Invited: <b>Lourenco Daniela</b> Chairs: Ciampolini R., Landi V.</p>
<b>11:00 – 11:30</b>	<i>Coffee break</i>			
	<p><b>11:30 - 13:15</b> Advances in rabbit and poultry products <i>Session 24</i></p> <p>Invited: <b>Stadnicka Katarzyna</b> Chairs: Bovera F., Soglia F.</p>	<p><b>11:30 - 13:45</b> L.E.O. project: the Italian research commitment for the future livestock strategies <i>Session 25</i></p> <p>Invited: <b>Burke Martin</b> Chairs: Donda M., Negrini R.</p>	<p><b>11:30 - 13:30</b> Advances in milk and dairy products quality <i>Session 26</i></p> <p>Chairs: Maggiolino A., Summer A.</p>	<p><b>11:30 - 13:15</b> Genomic tools for ruminant resiliency <i>Session 27</i></p> <p>Invited: <b>Di Croce Fernando</b> Chairs: Lasagna E., Sacchi P.</p>
<b>13:30 – 14:30</b>	<i>Lunch</i>			
	<p><b>14:30 - 16:30</b> Recent advances in mammary gland biology and health <i>Session 28</i></p> <p>Chairs: Caroprese M., Lacetera N.</p>	<p><b>14:30 - 17:15</b> Sustainable feeding strategies in livestock systems <i>Session 29</i></p> <p>Invited: <b>Pulina Giuseppe</b> Chairs: Pinotti L., Masucci F.</p>	<p><b>14:30 - 16:45</b> Precision Livestock Farming: production efficiency and environmental impacts <i>Session 30</i></p> <p>Invited: <b>Rose Guilherme</b> <b>O'Brien Bernardette</b> Chairs: Mattiello S., Neglia G.</p>	<p><b>14:30 - 16:30</b> Genomic tools for ruminant resiliency <i>Session 31</i></p> <p>Invited: <b>Lecchi Cristina</b> Chairs: Bozzi R., Pasquini M.</p>
<b>16:30 – 17:00</b>	<i>Coffee break</i>			
<b>17:00</b>	/	/	/	<b>ASPA Assembly</b>
<b>20:30</b>	<i>Social Dinner</i>			

## Friday June 16<sup>th</sup>

	Room Daunia	Room Peucetia	Room Messapia	Room Apulia
	<p><b>08:30 - 10:30</b>  <b>Animal welfare and health</b>  <i>Session 32</i></p> <p>Invited:  <b>Laloë Denis</b>            Chairs:  <b>Di Palo R., Santillo A.</b></p>	<p><b>08:30 - 11:00</b>  <b>Development of genomics in biodiversity</b>  <i>Session 33</i></p> <p>Invited:  <b>Laloë Denis</b>            Chairs:  <b>Biffani S., Cipolat-Gotet C.</b></p>	<p><b>08:15 - 11:00</b>  <b>Companion animals</b>  <i>Session 34</i></p> <p>Invited:  <b>Switonsky Marek</b>            Chairs:  <b>Cutrignelli M., Stefanon B.</b></p>	<p><b>08:00 - 11:00</b>  <b>Sustainable feeding strategies in livestock systems</b>  <i>Session 35</i></p> <p>Invited:  <b>Atzori Alberto Stanislao</b>            Chairs:  <b>Di Francia A., Bailoni L.</b></p>
<b>11:00 - 11:30</b>	<i>Coffee break</i>			
	<p><b>11:30 - 13:30</b>  <b>Research and sustainability in horse production</b>  <i>Session 36</i></p> <p>Invited:  <b>Vial Céline</b>            Chairs:  <b>Salimei E., Capomaccio S.</b></p>	<p><b>11:30 - 13:15</b>  <b>Insects' production for animal feeding</b>  <i>Session 37</i></p> <p>Chairs:  <b>Chiofalo B., Gasco L.</b></p>	<p><b>11:30 - 13:30</b>  <b>Advances in dietary feed supplementation</b>  <i>Session 38</i></p> <p>Chairs:  <b>Trabalza Marinucci M., Nudda A.</b></p>	<p><b>11:30 - 13:15</b>  <b>Genomic tools for animal resiliency and susceptibility</b>  <i>Session 39</i></p> <p>Invited:  <b>Vergani Andrea Mario</b>            Chairs:  <b>Bagnato A., Sartori C.</b></p>



$p = 0.0466$ ), in the C group ( $1.976, p = 0.0434$ ) in the second week, and in the other weeks FE resulted not significantly different among groups. Considering the per-week evaluation the CC dietary inclusion slightly affected the birds' performances. However, in the last weeks and considering the whole period, the results of this trial evidenced that no detrimental effect occurred when chickens fed CC at the three inclusion levels tested. FI, WG and FE data of each period or week, were processed as a completely randomized design with repeated measures using the MIXED procedure of SAS with the period (or week) and time as fixed effects. These findings highlighted that the CC dietary inclusion could be a valid alternative in the partial replacement of SM.

## O87

### Evaluation of essential oils from natural extracts and medium chain fatty acids on piglets growth performance, salivary stress markers and gut health

Luca Marchetti<sup>a</sup>, Raffaella Rebucci<sup>a</sup>, Carlotta Giromini<sup>a</sup>, Davide Lanzoni<sup>a</sup>, Paola Cremonesi<sup>b</sup>, Bianca Castiglioni<sup>b</sup>, Filippo Biscarini<sup>b</sup>, Vera Perricone<sup>a</sup>, Silvia Sandrini<sup>a</sup> and Valentino Bontempo<sup>a</sup>

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This study evaluated the effect of adding an additive (Gastroherb Plus<sup>®</sup>) composed by essential oils from natural extracts (Oregano) and medium and short chain organic acids (MCFAs) to the diet of weaning piglets on growth performance, salivary stress markers and microbiota composition. At weaning, a total of 210 piglets (26 d,  $7.66 \pm 1.09$  kg) were allocated, according to their body weight, to two experimental treatments. Each treatment was replicated 7 times, with 15 piglets per pen forming the experimental unit. Piglets were assigned randomly into the control group (CTR) fed the basal diet and the treated group (T) fed the basal diet mixed with a dosage of Gastroherb Plus<sup>®</sup> corresponding to 1.5 kg/ton of complete feed. The body weight and feed consumption were taken at 0, 14 and 35 days. Performances parameters were analysed by means of ANOVA for repeated measures, accounting for the effect of the treatment, time, and their interaction. Cortisol, IgAs and antioxidant capacity were analysed were analysed considering the GLM procedure of SAS v.9.1. Saliva samples were taken at day 14, 21 and 35 of trial for cortisol and IgAs quantification using a competitive and a sandwich ELISA kit while total salivary antioxidant capacity was assessed with FRAP test. At the end of the trial, 7 animals per group were sacrificed and caecal content was sampled in order to perform

microbiota evaluations. No significant differences were observed on BW, average daily gain, feed intake, and Feed conversion ratio, while increased fecal consistency was outlined in T compared to C. At day 21 no significant differences were noticed for cortisol in control ( $0.753 \pm 0.455$  ng/mL) and treated animal ( $0.921 \pm 0.328$  ng/mL). On the other hand, at day 35 d the treated group showed a significant decrease in salivary cortisol ( $0.672 \pm 0.308$  ng/mL vs  $1.289 \pm 0.645$  ng/mL,  $p < 0.05$ ). The levels of salivary IgAs and antioxidant capacity were not significant along the trial in control and treated animals. Sequencing the V3-V4 regions of the bacterial 16S rRNA gene produced a total of 2,815,715 reads. After bioinformatics processing, these yielded 741 OTUs with 336,691 total counts across all 14 samples. Firmicutes and Bacteroidetes were the most abundant phyla in both groups and a total of 12 differentially abundant genera ( $p$ -value  $< 0.05$ ) were identified in the treated group. In conclusion, the administration of Gastroherb Plus<sup>®</sup> positively affected salivary stress markers and gut health of weaned piglets.

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### The use of sugary and salty food industry leftovers as alternative to cereal grains does not affect the growth performance in growing and finishing pigs

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A more sustainable feeding strategy in pig production needs to be achieved in terms of reducing food waste and environmental footprint. One of the potential alternatives is the reintroduction into the feed chain of the food industry leftovers, also known as ex-food or Former Food Products (FFPs). The presence of manufacturing errors, packaging defects, and logistic challenges, makes these products no longer suitable for the human market. Due to the richness in lipids, starch and energy, FFPs-based diet could meet the needs of growing and fattening pigs. In this study FFPs were divided in two main categories (sugary and salty) and they were used in growing-finishing's diets in order to replace conventional ingredients and investigate their effects on growth performance. Thirty-six Swiss Large White male castrated pigs were assigned to the three grower and finisher experimental diets: (1) standard diet (ST-G; ST-F), 0% FFPs; (2) 30% conventional ingredients replaced by sugary FFPs (SU-G, SU-F); (3) 30% conventional ingredients replaced by salty FFPs (SA-G, SA-F). The grower and finisher diets were formulated to be iso-energetic