



ASPA 25th Congress Book of Abstract

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

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Email: adriana.bonanno@unipa.it

Fulvia Bovera, University of Napoli (Italy)

Email: bovera@unina.it

Salvator Calvet Sanz, Polytechnic University of Valencia (Spain)

Email: salcalsa@upvnet.upv.es

Alessio Cecchinato, University of Padova (Italy)

Email: alessio.cecchinato@unipd.it

Beniamino T. Cenci Goga, University of Perugia (Italy)

Email: beniamino.cencigoga@unipg.it

Alberto Cesarani, University of Sassari (Italy)

Email: acesarani@uniss.it

Stefania Chessa, University of Torino (Italy)

Email: stefania.chessa@unito.it

Alessandro Dal Bosco, University of Perugia (Italy)

Email: alessandro.dalbosco@unipg.it

Juan Vicente Delgado Bermejo, University of Córdoba (Spain)

Email: juanviagr218@gmail.com

Marion Girard, Agroscope (Switzerland)

Email: marion.girard@agroscope.admin.ch

Flaviana Gottardo, University of Padova (Italy)

Email: flaviana.gottardo@unipd.it

Andrea Minuti, "Sacro Cuore" Catholic University, Piacenza (Italy)

Email: andrea.minuti@unicatt.it

Gianluca Neglia, University of Napoli (Italy)

Email: neglia@unina.it

Anna Nudda, University of Sassari (Italy)

Email: anudda@uniss.it

Johan Osorio, South Dakota State University (USA)

Email: johan.osorio@sdstate.edu

Manuela Renna, University of Torino (Italy)

Email: manuela.renna@unito.it

Evangelia Sossidou, Veterinary Research Institute, NAGREF Campus, Thessaloniki (Greece)

Email: sossidou.arig@nagref.gr

Giuseppe Stradaoli, University of Udine (Italy)

Email: giuseppe.stradaoli@uniud.it

Hai-Jun Zhang Feed Research Institute, Chinese Academy of Agricultural Sciences Beijing (China)

Email: fowlfeed@163.com

Italian Journal of Animal Science

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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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ASPA 25th Congress

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

Guest Editors

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

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ASPA 25th Congress

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

#ASPA2023

ASPA 25th 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**

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Via C. Cossogrosso, Z.L. 79917 Mottolone, BA, Italia
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caseificio@palazzo.com

CASEIFICIO PALAZZO SPA
Via C. Cossogrosso, Z.L. 79917 Mottolone, BA, Italia
ufficio: T +39 080495810 F+3906121 01612029
caseificio@palazzo.com



The 25th 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 13th to the 16th June 2023, a special location also for celebrating the 50th 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 25th Congress

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

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Program at a glance

Tuesday June 13th

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

Opening Ceremony




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

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

Wednesday June 14th

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

Thursday June 15th

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

Friday June 16th

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

highly influenced the microbiota composition in horses and HF resulted to be associated with a higher bacterial diversity in CAE, PF and RDC. Further research should describe the relationship between the feeding management, the immune system and the metabolic status of the horse.

O279

***In vitro* evaluation of biochar from chestnut and vine residues gassification as possible feed additive: antioxidant and antimicrobial activities**

Serena Reggia^a, Marianna Guagliano^b, Simone Pedrazzi^c, Giulio Allesina^c, Ambra Spalletta^d, Simona Scoranelli^d, Cinzia Cristiani^b and Luciana Rossi^a

^a*Dipartimento di Medicina Veterinaria e Scienze Animali (DIVAS) DIVAS, Università Degli Studi di Milano, Lodi, Italy*

^b*Dipartimento di Chimica, Materiali e Ingegneria Chimica, Politecnico di Milano, Milano, Italy*

^c*Dipartimento di Ingegneria, Università di Modena e Reggio Emilia, Modena, Italy*

^d*Biotecnologie BT Srl, Perugia, Italy*

Biochar has been used for different agriculture and environmental applications to minimize waste and increase the circular economy's efficiency. Particularly, the use of biochar as a feed ingredient has the potential to improve animal health, feed efficiency, and livestock housing climate. In the scientific understanding, it is still unclear why biochar, as a feed additive, promotes the observed effects. The variability in physical-chemical-biological properties depends on pyrolysis temperature and waste used. In the present work, two different biochar from (i) chestnut waste (CB) and (ii) vine residues (VB) were characterized for chemical composition and functional properties. The chestnut and vine biochar were extracted into hot water (90 °C for 3 h head-over-heels) and the extracts were analyzed for inorganic/organic components by HPLC-MS. The antioxidant activity was determined by a colorimetric assay (ABTS assay). The antioxidant activity of vine biochar is significantly higher than chestnut biochar (110 TE/gr vs 54 TE/gr; $p \leq 0.1$). In the present study, the extracts were tested for their effects on *in vitro* growth inhibitory activities against enterotoxigenic *E. coli* species. Overnight-grown *E. coli* were inoculated into tubes containing 20 mL of Luria-Bertani medium (LB) supplemented with 0, 25, 50, and 100 µL/mL of biochar water extracted. Tubes were cultured aerobically at 37 °C and the bacterial growth rate was determined spectrophotometrically by optical density at 600 nm (at 60 min intervals for 6 h). The same concentrations of biochar extract (0, 25, 50, and 100 µL/mL) were tested on growth of *L. plantarum* and *L. reuteri* cultured in MRS broth. The optical density at 600 nm

was checked every 2 h for a total of 12 h. Our results demonstrate that both biochar extracts exerted a significant inhibitory activity dose depending ($p \leq 0.1$) against pathogenic *E. coli* strains; the maximum percentage of inhibition, corresponding to a reduction of 29% of bacterial cells, was observed after 2–3 h of incubation with 100 µL/mL of biochar extracted. On the contrary, the growth of *L. plantarum* and *L. reuteri* was not negatively influenced. Significant differences between groups were performed by one-way ANOVA (GraphPad Prism). These preliminary results suggest that an appropriate dosage of biochar may be interesting to inhibit the growth of pathogenic *E. coli* and consequently a valid alternative for the reduction of the use of antibiotics.

O97

Effect of a combination of three yeasts on growth performance and gut health of weaning piglet

Silvia Sandrini^a, Vera Perricone^a, Paola Cremonesi^b, Bianca Castiglioni^b, Filippo Biscarini^b, Eva R. Parra Titos^c, Francesco Vittorio^c, Nicole Verdile^d, Tiziana Brevini^a, Giovanni Savoini^a and Alessandro Agazzi^a

^a*Dipartimento di Medicina Veterinaria e Scienze Animali, Università degli Studi di Milano, Lodi, Italy*

^b*Istituto di biologia e biotecnologia agraria (IBBA-CNR), Lodi, Italy*

^c*Vétoquinol Italia S.r.l., Bertinoro, Italy*

^d*Department of Agricultural and Environmental Sciences, (DiSAA), Milano, Italy*

The present study aimed to investigate the efficacy of a yeast mixture (YM, Levustim B0399, Vetoquinol; *Kluyveromyces marxianus fragilis* B0399, *Pichia guilliermondii*, and *Saccharomyces cerevisiae*, intact inactivated cells) on growth performance and gut health of weaned piglets. Forty-eight male piglets (27 ± 1.7 d, 7.19 ± 0.54 kg) were randomly allocated to two homogeneous experimental groups and involved in a 28-days trial. Both groups received a basal diet with (T) or without (C) inclusion of 0.8% YM during weeks 1 and 2, and 0.6% during weeks 3 and 4. Bodyweight (BW) was evaluated on days 0, 14, and 28 d, and fecal score recorded daily. Fecal samples were collected on 4, 14, 21, and 28 d for microbiota analysis. On day 28, 12 piglets for each group were sacrificed and the ileum tissue was sampled for morphological analysis (villi height (VH) and width, crypts depth (CD), and VH:CD ratio) and for analyzing the overall mucins profile using Alcian-Blue combined Periodic acid-Schiff (PAS) staining. Differences in the means between the experimental groups were determined by analysis of variance (ANOVA). Growth performance and fecal score were analysed by a MIXED procedure of SAS for repeated measures, while morphological parameters were analysed using a GLM procedure. In all the cases, the piglet represented the experimental unit, and significance was declared