Italian Journal of Animal Science

ISSN: (Print) 1828-051X (Online) Journal homepage: https://www.tandfonline.com/loi/tjas20

ASPA 23rd Congress Book of Abstracts

Fulvia Bovera

To cite this article: Fulvia Bovera (2019) ASPA 23rd Congress Book of Abstracts, Italian Journal of Animal Science, 18:sup1, 1-239, DOI: 10.1080/1828051X.2019.1622269

To link to this article: https://doi.org/10.1080/1828051X.2019.1622269

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

Published online: 15 Aug 2019.

Submit your article to this journal

Article views: 837

View related articles

View Crossmark data

Full Terms & Conditions of access and use can be found at
https://www.tandfonline.com/action/journalInformation?journalCode=tjas20

Official Journal of the Animal Science and Production Association (ASPA)

*

ISSN: 1828-051X

*

http://www.tandfonline.com/tjas

*

Italian Journal of Animal Science

*

volume 18

supplement 1

2019

italian journal of animal science

ASPA 23rd CONGRESS

Sorrento, June 11–14, 2019

Book of Abstracts

Guest Editors: Fulvia Bovera (Coordinator), Marzia Albenzio, Mariangela Caroprese, Rosaria Marino, Gianluca Neglia, Giovanni Piccolo, Angela Salzano.

Taylor & Francis
Taylor & Francis Group

Italian Journal of Animal Science

Official Journal of the Animal Science
and Production Association

Online ISSN: 1828-051X

Editor-in-Chief
Marcello Mele, University of Pisa (Italy)

Deputy Editor
Marcello Mele, University of Pisa (Italy)

Associate Editors
Umberto Bernabucci, University of Tuscia, Viterbo (Italy)
Federica Cheli, University of Milano (Italy)
Oreste Franci, University of Firenze (Italy)
Jean-François Hocquette, INRA (France)
Nicolò Pietro Paolo Macciotta, University of Sassari (Italy)
Antonino Nizza, University of Napoli (Italy)
Giuliana Parisi, University of Firenze (Italy)

Section Editors
Alessandro Agazzi, University of Milano (Italy)
Susana Alves, Universidade Técnica de Lisboa (Portugal)
Luca M. Battaglini, University of Torino (Italy)
Ali-Reza Bayat, Natural Resources Institute (Finland)
Francesca Bertolini, Technical University of Denmark (Denmark)
Massimo Bionaz, Oregon State University (USA)
Alessio Bonaldo, University of Bologna (Italy)
Fulvia Bovera, University of Napoli (Italy)
Salvator Calvet Sanz, Polytechnic University of Valencia (Spain)
Alessio Cecchinato, University of Padova (Italy)
Beniamino T. Cenci Goga, University of Perugia (Italy)
Stefania Chessa, University of Torino (Italy)
Alessandro Dal Bosco, University of Perugia (Italy)
Juan Vicente Delgado Bermejo, University of Córdoba (Spain)
Flaviana Gottardo, University of Padova (Italy)
Andrea Minuti, "Sacro Cuore" Catholic University, Piacenza (Italy)
Anna Nudda, University of Sassari (Italy)
Johan Osorio, South Dakota State University (USA)
Manuela Renna, University of Torino (Italy)
Evangelia Sossidou, Veterinary Research Institute, NAGREF Campus, Thessaloniki (Greece)
Giuseppe Stradaioli, University of Udine (Italy)
Paolo Trevisi, University of Bologna (Italy)
Eleni Tsiplakou, Agricultural University of Athens (Greece)
Haijun Zhang, Feed Research Institute, Chinese Academy of Agricultural Sciences Beijing (China)

Taylor & Francis
Taylor & Francis Group

seabreams. Fishes with an initial weight of 181.6 g (±13.5) were fed for 120 days with a control diet (CTR: 100% fishmeal) and three experimental diets containing increasing levels of defatted HI meal in substitution of 25 (R25), 50 (R50) and 75% (R75) of fishmeal, leading to a HI inclusion of 9.2%, 18.4% and 27.6%, respectively. At the end of the feeding trial, growth performances such as specific growth rate (SGR), feed conversion rate (FCR) and protein efficiency rate (PER) were calculated and the gut of fifteen fishes (per treatment) were fixed in Bouin (24 h), dehydrated in ethanol and embedded in paraffin, to obtain 5 µm-thick sections stained with haematoxylin and eosin. In addition, on gut sections, the following morphometric indexes were measured: villi length; villi ramification; number of goblet cells; submucosa layer detachment; villi fusion; position of enterocytes nuclei; vacuolation of enterocytes.
Results on growth performances highlight that dietary inclusion of HI meal in seabream fed up to 18.4% of inclusion level did not influence any of the growth performance traits. On the other hand, HI inclusion level of 27.6% worsened significantly SGR (p=.003), FCR (p=.007) and PER (p=.007). Histological evaluation showed no significant differences between the CTR group and the R25 one. On the contrary, in some R50 subjects anatomo-functional changes of the gut were observed. More frequent and pronounced structural alterations were observed in R75 group, both in the anterior and posterior part of gut; in some cases, haemorrhagic spots were observed. Significant (p<.05) changes in the morphometric parameters of groups fed higher levels of HI (mostly R50 and R75) confirmed the results of anatomopathological exam. In conclusion, it is important to take into account not only the effects of HI meal on growth performances but also those on the histological analyses that highlight the onset and increasing of an irritant state of gut-associated with the increase of HI substitution level.

O080

Fillet qualitative characteristics of Atlantic salmon fed diets including *Hermetia illucens* larvae

Giulia Secci[1], Leonardo Bruni[1], Monica Borgogno[2], Ikram Belghit[3], Erik-Jan Lock[3], Giuliana Parisi[1]

[1]*Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali, University of Firenze, Italy*
[2]*Mérieux NutriSciences Italia, Prato, Italy*
[3]*Institute of Marine Research, Bergen, Norway*
Contact: giulia.secci@unifi.it

Aquaculture is expected to supply more than 65% of global fish production by 2030, thus increasing quantities of fish meal (FM) will be necessary as protein source in aquafeeds. However, the fish stocks (mainly anchovy and herrings) from which FM derives are nowadays overexploited. Hence, aquafeed production needs to be based on alternative protein sources. Among the other, insects are promising due to their fast growth, easy reproduction, few nutritional requirements and their ability to recycle organic waste. The present study tested the effects of the replacement of FM with partially defatted *Hermetia illucens* larva meal (HI) in the diet for seawater-phase Atlantic salmon (*Salmo salar* L.) on physico-chemical characteristics and consumer liking of fillets. Triplicate sea-cages of A. salmon were fed one of four isoproteic, isoenergetic and isolipidic diets for 16 weeks: a control diet (C, 0% of HI) and three diets with increasing substitution levels of FM with HI (33, 66 or 100%; IM33, IM66 and IM100, respectively). Then, fish were percussively slaughtered and filleted. Four salmon fillets from each sea-cage were allotted to physico-chemical analyses (n = 6) and consumers' test (n = 6). The physico-chemical analyses included colour evaluation (Chroma Metre Cr-200, Tokyo, Japan), water holding capacity (WHC), texture profile analysis (Zwick Roell® texturometer, Zwick GmbH & Co. KG, Ulm, Germany), and proximate composition determination. A blind product test was performed with 80 consumers who evaluated on a 9-points scale the liking for appearance, odour, flavour, texture, and the overall judgement; they evaluated the adequacy of colour, texture, appearance, aroma, flavour and salty intensity, juiciness and fibrousness. Colour, WHC, texture and proximate composition were not affected by diet. Only IM66 group contained higher amount (p<.05) of protein than IM100 (20.92 and 19.48g/100g of fillets, respectively), while C and IM33 assumed intermediate values. Consumers' liking was unaffected by the diet and received scores from 6 to 9. The main criticisms were related to the adequacy of colour and textural attributes. Indeed, IM100 group was considered the palest, the most fibrous and with the lowest aroma and flavour. Nevertheless, consumers highlighted their propensity to future consumption. To sum up, the inclusion of HI in diets for A. salmon determined physical modifications which were not instrumentally quantified, but which were perceived and accepted by consumers.

Acknowledgements
This study was supported by the Norwegian Research Council project Aquafly, grant number 238997.

ANIMAL PHYSIOLOGY, HEALTH AND WELFARE – ANIMAL NUTRITION: EFFICIENCY

O081

Sources of variation in TMR delivered to dairy cows: a field study

Vera Perricone[1], Alessandro Agazzi[1], Annamaria Costa[1], Aldo Calcante[2], Giovanni Savoini[1], Massimo Lazzari[1], Federica Cheli[1], Antonio Crotti[1], Diego De Nisi[1], Francesco Maria Tangorra[1]

Taylor & Francis
Taylor & Francis Group

[1]*Dipartimento di Scienze Veterinarie per la Salute, la Produzione Animale e la Sicurezza Alimentare, University of Milano, Italy*

[2]*Dipartimento di Scienze Agrarie e Ambientali – Produzione, Territorio, Agroenergia, University of Milano, Italy*

Contact: vera.perricone@unimi.it

Total mixed ration (TMR) delivered to dairy cows can be subjected to daily variations in its chemical composition and particle size distribution (PSD). These variations could negatively affect nutrients provision and performance. Sources of variations in TMR depend on a number of factors: besides the variability of forages itself, some of the diet preparation procedures (DPP) could account. The aim of this study was to detect the variation sources in TMR with especial regard to DPP in field. The study was conducted using a horizontal self-propelled TMR mixer wagon (Gulliver 6014, Sgariboldi, Codogno, Italy) with desilage conveyor arm, cutting slasher, and mixer tank of 14 cubic metre capacity with paddle technology. Charging feeds times (CFT) and sequences (SEQ), feeds mixing times (FMT), and discharging times (DT) of TMR were considered in a dairy farm located in the north of Italy (Lombardy). The diet provided was based on corn, grass silages and hay. Samples of each TMR were collected at the beginning, middle and end of the feeding alley (FA) for chemical composition and PSD (Penn Particle Size Separator) of the diet. Feed samples were analysed for dry matter (DM), crude protein (CP), ether extracts (EE), neutral detergent fibre (NDF), acid detergent fibre (ADF) and ash content. Data were analysed by ANOVA of S.A.S. (v9.2) dividing CFT, FMT and DT in homogenous classes, while a total of four SEQ were considered. Significance was declared for $p<.05$. Obtained results showed as the chemical composition of the diet was significantly modified along the FA for DM, CP, EE and ash content, while no differences were found for NDF and ADF. In most of the cases accounted DPP such as SEQ, FMT and DT hugely influenced the chemical homogeneity of the diet in terms of DM, CP, EE, NDF, ADF and ash ($p< .01$), while no effects were detected for CFT on EE and NDF content. PSD of the diet was strongly modified in middle, lower and bottom sieves of Pen Particle Size Separator along the FA ($p< .01$), while the major effects of DPP were found on the lower and the bottom sieves ($p< .01$). The present study shows how each step of the TMR preparation can affect both the chemical content of nutrients and the PSD of the diet. In particular DM and PG diet content, together with lower and bottom sieves are the items most affected by all the DPP considered.

Acknowledgements

The research was co-funded by Regione Lombardia in the framework of POR FESR 2014–2020 (Axis I, Objective 1.b.1).

O082

Evaluation of feed efficiency in Italian Holstein Friesian heifers and lactating cows

Fabio Omodei Zorini, Elena Mariani, Thi Xuan Nguyen, Guido Invernizzi

Dipartimento di Scienze Veterinarie per la Salute, la Produzione Animale e la Sicurezza Alimentare, University of Milano, Italy

Contact: guido.invernizzi@unimi.it

At present, the improvement of livestock feed efficiency (FE) represents one of the main challenges for the future of the agri-food supply chain, aimed at increasing farm sustainability and profitability. The growing awareness of the relationships between FE and factors like dry matter intake, methane emission and thermoregulation, contributes to the interest in selecting for efficient animals. The aim of this work was to investigate the relationships between different indices of FE and performance parameters in a herd of Italian Holstein-Friesian dairy cattle. Trials were conducted at the Experimental farm of Animal Production Research and Teaching Centre of Lodi (CZDS). The first batch of 16 heifers was investigated for dry matter intake (DMI), body weight (BW), body condition score (BCS) and other growth parameters. Data obtained were used to calculate the residual feed intake (RFI) and feed conversion ratio (FCR) of each animal. After the ex-post division of the batch into two groups with the higher (H-RFI) and the lower (L-RFI) RFIs, data were analysed by a MIXED procedure of SAS. Significant differences were highlighted between DMI values of the two groups ($p=.01$) and also for the wither height gain character ($p<.05$). The second batch of 30 lactating cows was investigated for DMI, BW, BCS, milk yield and composition. Data obtained were used to calculate the RFI and milk to feed ratio (M:F) of each animal. The ex-post division of the batch into two groups with the higher and the lower RFIs highlighted a statistically significant difference between DMI values of the groups but not between milk production-related parameters. Statistical analysis also underlined a positive correlation (CORR procedure, SAS) between RFI and DMI values (PCC =0.80) but not between RFI and milk production-related parameters, as opposed to M:F values, characterised by negative relations with milk energy output (PCC= –0.69) and energy corrected milk (PCC= –0.63). Our results confirm the goodness of RFI as an index of FE, a character increasingly regarded as independent from growth and production level and more linked to the animal intrinsic metabolic processes.

Acknowledgements

We gratefully acknowledge 'Società Agricola Gimondi S.S. di Montanaso Lombardo (LO)', the owner of the herd, for its active collaboration.