Editorial

Dairy Cow Nutrition and Milk Quality

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Dairy products are becoming increasingly important for improving human health, especially during the COVID-19 pandemic. There is a strong demand for the improvement and evaluation of milk quality and animal welfare. This Special Issue, entitled “Dairy Cow Nutrition and Milk Quality”, was organized by the journal *Agriculture* as a way to collate original research articles on the latest developments in the application of modern molecular technology in dairy cow nutrition and milk quality, which will help to uncover the metabolic mechanisms among animal, milk, and human health functions, and could improve our understanding of milk, not only as a source of normal dietary nutrients, but also as a source of bioactive compounds with direct human health benefits.

For this Special Issue, we received 24 submissions in total, and after a comprehensive review process for each submission, 7 high-quality papers [1–7] were accepted for publication in the journal (i.e., the acceptance rate was around 0.29), including 2 reviews and 5 research articles. Tian et al. [1] systematically introduced anthocyanins as effective antioxidants and free radical scavengers derived from fruit, purple corn, and other purple plants, and demonstrated its favorable antioxidation function in dairy cows by preventing lipid oxidation to improve milk quality. Williamson et al. [2] comprehensively reviewed the association of milk somatic cell count (SCC) with the bacteriological cure of intramammary infection. The diagnosis of SCC could act as an indicator for antibiotic usage, which means to increase the cure rates of mastitis through evaluating milk SCC prior to administering treatment.

The five research articles are mainly focused on the role and influence of different environmental factors and dietary nutrients on milk food safety and milk nutritional quality. Florio et al. [3] explored the effects of the seasonal feeding system on the qualitative parameters of bovine milk produced in the Abruzzo region in Italy. The study found the saturated fatty acid concentrations in milk samples from outdoor grazing were lower, while ruminal acid, vaccenic acid, and oleic acid contents were increased, and the α and β casein contents were also at their highest, suggesting that the outdoor breeding system was positive in improving the main qualitative trait of bovine milk in the warm seasons. Zhao et al. [4] reported that increasing a dietary inulin supplementation could cause a change in the lactation, rumen fermentation, and blood biochemical parameters in mid-lactation dairy cows. In the study, in thirty-six mid-lactation Holstein dairy cows using six inulin gradients, respectively, the researcher found that inulin could increase milk production, shift the milk fatty acid profile, upregulate the rumen volatile fatty acid concentration, and enhance the antioxidant and immunity function in dairy cows in a dose-dependent manner. While in the research of Wu et al. [5], they discussed the effects of dietary natural mycotoxins exposure on the performance, biochemical parameters, and milk small molecule metabolic pathways of lactating cows. The results showed that feeding lactating cows diets containing natural mildewy corn meal and cottonseed reduced the feed intake, milk yield, and milk fat, protein, and lactose productions. In addition, to investigate the enzyme sequence action on the degradation of corn stover and obtain the best effect, Zhao et al. [6] conducted a complete randomized design using four enzymes of cellulase, hemicellulase, pectinase, and...
laccase, and concluded that the sequential action of fiber-degrading enzymes affected the chemical composition of corn stover. At last, Televičius et al. [7] identified the relationship of calvin ease and the level of in-line milk urea and other milk components including the milk yield, electrical conductivity, milk fat, milk protein, milk fat/protein ratio, and somatic cell count in dairy cows. The research found that dystocia had a negative effect on the milk urea concentration and can increase the risk of mastitis.

In conclusion, the Guest Editors have selected papers covering the major topics of “Dairy Cow Nutrition and Milk Quality” to adequately contribute to the existing literature and fill in several critical research gaps in the critical work of fulfilling the purpose of theory and industry. The Guest Editors wish to express their thanks to the Editor-in-Chief and the Section Managing Editor, as well as the Editorial team and the Reviewers of Agriculture, who helped us in the journey to publishing this Special Issue.

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References
1. Tian, X.; Lu, Q. Anthocyanins in Dairy Cow Nutrition: A Review. Agriculture 2022, 12, 1806. [CrossRef]
2. Williamson, J.; Callaway, T.; Emmanuel, R.; Ryman, V. Association of Milk Somatic Cell Count with Bacteriological Cure of Intramammary Infection—A Review. Agriculture 2022, 12, 1437. [CrossRef]
3. Florio, M.; Giannone, C.; Ianni, A.; Bennato, F.; Grotta, L.; Martino, G. Seasonal and Feeding System Effects on Qualitative Parameters of Bovine Milk Produced in the Abruzzo Region (Italy). Agriculture 2022, 12, 917. [CrossRef]

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