

Know-edge Nutrition Interview Series

Managing without Antibiotics - An approach not a product



Antoine Rousseau is an international poultry expert spanning a career of almost 30 years in various capacities. With a technical background in animal husbandry, nutrition and production control, he now serves as an advisor to the President of Techna Group, France for the Poultry sector.

1. What is the future of Antibiotic Growth Promoters (AGP) in poultry/animal production, worldwide?

There is a global trend to move away from the Antibiotic Growth Promoter. The use of AGPs is already restricted or forbidden in many countries. The following factors are among the main reasons for these restrictions:

- **Legislative compliance:** At the international level, many authorities have reacted to the global health crisis of antimicrobial resistance by restricting antimicrobial usage in animal feed.
- **Consumer expectations:** Consumers want to eat healthy meat devoid of antibiotic residues. These expectations are strongly correlated to information campaigns publicizing the threats posed on meat safety after finding out the extent to which antibiotics can be used in food animal production. Therefore, from a medical standpoint, there is a rising awareness about AMR (antimicrobial resistance) issue and its negative implications on human health.
- **Emergence, Selection and dissemination of Antibiotic Resistant Microorganisms:** Needless to add antibiotics were widely commercialized between the 60s and the 80s and that resistant strains emerged rapidly after.

Overall, the replacement of AGP in animal feed is a trend which is gaining ground in many countries. Whether this tendency will apply to all the countries is still unsure. The issue of multi-resistant is in fact a human health issue. Some global food companies from countries where people eat the most meat (the U.S for instance) have already shown the example: Tysons and McDonalds, for instance, have stepped up efforts to minimize and in some cases eliminate antibiotics in their products.

2. What are the experiences from countries where AGP is no longer in use?

On a worldwide scale use of antibiotic as AGP differs dramatically. Several countries have banned the usage of antibiotics in animal production like Sweden (1986), Denmark (1998), EU (1997-2006), Bangladesh (2010) and the USA (2017). To pursue this trend, EU-wide ban on the use of antibiotics as growth promoters in animal was adopted on January 1, 2006.

Experiences drawn from these countries have demonstrated that moving to antibiotic free production is not without its short-term challenges. However, these countries have exceeded the flock performance levels as compared to antibiotic growth promoter usage.

In the 2000s as several molecules had been already been banned, the industry outpaced legislature by trying to find a quicker way out of AGPs. So, at the beginning of the 2000s, a lot of poultry productions had already turned to AGP free regimens. On the performance level, poultry experts of Europe have analyzed all these changes. In retrospect, when looking at the curve of these evolutions, there is no doubt that the animal feed sector successfully managed to cope with this new order. This is all the more remarkable since at that time, meat and bone meal were also being prohibited and replaced by 100% plant and mineral feed in poultry diet.

Therefore, there is no denying that the feed Industry was able to resolve this challenge. Many adjustments were implemented to restore similar performances in terms of growth, feed efficiency and livability by resorting to the following strategies: strengthening husbandry techniques, implementing biosecurity measures and finding substitutes in order to restore animals' digestive balance.

3. How can AGP free production be achieved?

Achieving a profitable AGP free production requires a holistic approach. Management practices play a very important part in achieving better productivity and profitability. Farm practices must be reassessed putting more emphasis upon:

a) Farm Management

- *Hygiene:* Cleaning and disinfection

procedures must be stressed to achieve the lowest possible contamination levels. Facilities must absolutely undergo an appropriate period of fallowing (sanitary break) after being emptied and, where appropriate, cleansed and disinfected in order to be thoroughly decontaminated.

Production management: Well-honed husbandry techniques are a must. What matters most is to ensure animals' comfort: Rearing techniques must be based as far as possible on the 'all-in/all out' principle so that at times, the building can be completely emptied.

Biosecurity: Exterior contamination must be avoided by protecting flocks. In humid and hot areas, this means that extreme caution must be paid to sanitary pressure as it is often threatened by environmental conditions. This also requires setting up sanitary/hygiene barriers: all living entities must be controlled in this regard. This means also that rearing facilities must be provided with a hygiene lock designed to prevent potentially contagious agents from getting in.

Inanimate objects: Delivery vehicles/trucks and equipment must be thoroughly checked.

Water hygiene: Bacteriological and chemical quality of water must be under control. Continuous disinfection is a necessity. Choice of the hygiene product must be reflected depending on the chemical properties of water and the purchase price of the product.

b) Feeding and Nutrition

One must use feed additives that enhance gut health and increase overall animal performance.

c). Veterinary Care

- Vaccination plans should be carried out.
- Disease diagnosis must be made in a correct and timely manner.

In conclusion, AGP-free production can undoubtedly be attained through constant monitoring and adjustment.

4. What are the various non-AGP alternatives available now? How does one select the appropriate one?

Since AGPs were all banned, various ingredients have shown their interest in poultry nutrition: among these are Prebiotic Oligosaccharides, Yeast extracts, Probiotics, Acidifiers and Essential oils are part of these ingredients. Their selection is guided by two purposes: to find a proper balance in microbiota and to increase feed efficiency.

In this regard, it is possible to use mono-constituent solutions such as products based on phenolic aromatic compounds. On the field however, association of ingredients can be observed. The screening of these solutions requires on-field experience. This is the only place where the interactions between products and environment are visible. Academic trials could be a first step to start this evaluation.

5. Any important changes in the feed formulation when one is switching to raising poultry without AGPs?

Changes in feed formulations are to be considered to cope with this switch. The approach to nutrition must be more specific and precise. Therefore, utmost caution must be paid to feed quality via three aspects:

Characterization: Raw material must be well characterized so that their nutritional valuation is optimal and as precise as possible.

Stress on physical form of the complete feed: to preserve feed intake, we must pay particular attention to the physical form of feed. In an AGP free context, animal digestive balances are more prone to disorders. The slightest deviation is likely to have strong reverse effects on the digestive sphere.

Appropriate nutrition balance: it is important to be aligned with the animals' genetic potential which changes constantly. This means that we must be able to adapt to the animal's evolution in terms of requirements according to their genetic potential. For example, evolutions in FCR (feed conversion ratio) cause significant decreases in feed consumption in order to achieve the same market weight. Diets must therefore be more concentrated as far as protein and metabolizable energy are concerned.

6. Does AGP free production of poultry result in a big drop in efficiency and performance?

When this switch occurred in the EU, the industry was well prepared. It took advantage of the upstream work done by the feed service companies prior to the deadline. Very early, before the bans on AGP were all applied, these companies had tried to find potential alternatives in terms of product and husbandry techniques. Thorough screenings had been run in experimental centres. Thanks to these trials, families of potentially interesting products had been selected and identified.

At that point, the most important stage consisted in validating the most stable solutions. Such was the case of one of a product comprising blend of essential oils which was designed in 1998. Generalization of these new concepts was made possible after this initiating test & trial phase. Tools were also designed and deployed to allow one to monitor the poultry industry's technical & economic performance on the field. These solutions are still undergoing changes to be constantly improved.

As a result, no drop in productivity was seen in relation to that evolution.

7. There are many non-AGP alternatives. Does the high feed cost have any impact on profitability?

Non-AGP alternatives are many and they are all quite expensive. Our

internal evaluation demonstrates that a non-AGP solution can be cost effective versus an AGP. When considering the feed cost per ton of live weight, there is even a slight advantage that covers significantly the cost of the product.

Feed cost depends upon the alternative that is selected. This has been a critical concern for animal nutritionists when designing suitable new generation products for instance, those which are based on phenolic aromatic compounds.

Based on several trials and practical experiences in various geographical locations, a gain of 2% in terms of growth and feed efficiency typically generates a ROI of 1:3. The benefit is surely worth considering for a customer.