

The Utilization of Anti-microbial as Progression Promoters in Poultry Nourishes

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Abstract

Antibiotics as growth promoters in animal feed have been permitted in European Union member countries for the past 50 years. However, concerns about the development of antimicrobial resistance and the transfer of antibiotic resistance genes from animal to human microbiota have resulted in the European Union withdrawing approval for antibiotics as growth promoters since January 1, 2006. This report examines the history of European legislation on the use of antibiotics in poultry feeds, from the first harmonisation by Directive 70/524 to the deletion of these substances from the European Register of additives permitted in feeds by Regulation 1831/2003. The European Union's support for World Health Organization, Food and Agriculture Organization, and World Organization for Animal Health recommendations for a ban on antimicrobial use in animal feeds is expected to encourage other countries to do the same.

Keywords: Antibiotics; Growth promoters; Animal feeds; Chlortetracycline

Introduction

Antibiotics' growth promoter effect was discovered in the 1940s, when it was discovered that animals fed dried mycelia of *Streptomyces aureofaciens* containing chlortetracycline residues grew faster. Antibiotics' mechanism of action as growth promoters is linked to interactions with the intestinal microbial population [1]. In 1951, the Food and Drug Administration of the United States approved the use of antibiotics as animal additives without a veterinary prescription. Similarly, in the 1950s and 1960s, each European country passed its own national regulations governing the use of antibiotics in animal feed.

Because national regulations in each member state differed in terms of their basic principles, European harmonisation of regulations concerning additives in feeding stuffs aimed at the establishment and operation of a common market for animal feeds [2]. The basic principle of regulation was laid down by Council Directive 70/524, which was published in the Official Journal L 270 on December 14, 1970: only those additives named in this Directive may be contained in feeding stuffs and only subject to the requirements set out in this Directive.

The member states enacted the necessary laws, regulations, and administrative provisions to comply with this Directive within two years of notification, and as of November 25, 1972, additives, feeding stuffs containing additives, and human foods derived from livestock fed additives were subject only to the marketing restrictions outlined in this Directive [3]. This regulation also applied to other European Economic Area members (Iceland, Norway).

Directive 70/524 was recently superseded by Regulation 1831/2003 of the European Parliament and of the Council on animal nutrition additives. Antibiotics other than coccidiostats and histomonostats were only permitted to be marketed and used as feed additives until December 31, 2005, according to Regulation 1831/2003 [4]. Anticoccidial substances, such as antibiotics and ionophores, will also be banned as feed additives before 2013. Medical substances in animal feeds will be restricted to therapeutic use only with a veterinary prescription after this date.

The types of antibiotics banned

Because only antibiotics that are not absorbed in the digestive tract are permitted as growth promoters, the risk of antibiotic residues in edible tissues and products causing allergic or toxic reactions in consumers is known to be negligible [5]. However, the widespread use of antibiotics as feed additives may, in the long run, contribute to the development of antibiotic-resistant bacteria. If these microbial with resistant genes are transferred to humans, they may pose a risk to them. As a result, the World Health Organization and the European Union's Economic and Social Committee concluded that the use of antimicrobials in food animals is a public health concern.

Antibiotics from classes that were or could be used in human or veterinary medicine were transferred from Annex I to Annex II as early as the 1970s in order to phase them out after a certain period. It was the case of tetracyclines, penicillins, and oleandomycin, which were placed in Annex II and were only allowed to be used on a national scale in poultry feeds. This national authorization was valid until June 30, 1976 or September 30, 1979, whichever came first [6].

A member state that had detailed grounds for establishing that the use of one of the additives authorised at the Community scale constituted a danger to animal or human health or the environment as a result of new information or a reassessment of existing information made since the provisions in question were adopted could temporarily suspend the authorization to use that additive in its territory and should immediately inform the Commission; The decision on the additive was made based on the information provided by the state [7].

Sweden banned the use of antibiotic additives in feed in 1986.

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Received: 26-Dec-2022, Manuscript No: JFLP-22-84920, **Editor assigned:** 28-Dec-2022, PreQC No: JFLP-22-84920(PQ), **Reviewed:** 11-Jan-2023, QC No: JFLP-22-84920, **Revised:** 16-Jan-2023, Manuscript No: JFLP-22-84920(R), **Published:** 23-Jan-2023, DOI: 10.4172/2332-2608.1000385

Citation: Stevens K (2023) The Utilization of Anti-microbial as Progression Promoters in Poultry Nourishes. J Fisheries Livest Prod 11: 385.

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When Sweden joined the European Union in 1995, it was allowed to keep its pre-accession legislation in force until December 31, 1998. Prior to that date, Sweden submitted applications for adjustments to the antibiotics authorised in the Community, accompanied by detailed scientific justification [8, 9].

Other member states have also prohibited the use of certain antibiotics in animal feedstuffs on their territories. Avoparcin was banned in Denmark and Germany on the grounds that it causes resistance to glycopeptides used in human medicine, spiramycin was banned in Finland because it was used in human medicine, and virginiamycin was banned in Denmark because two streptogramins were clinically important in human medicine [10, 11]. As a result of these national initiatives, Directive 97/6 withdrew approval for Avoparcin on April 1, 1997, and Regulation 2821/1998 prohibited spiramycin and virginiamycin on June 30, 1999. Regulation 2821/1998 also prohibited the use of bacitracin zinc in human medicine to treat skin infections.

Sweden implemented the safeguard clause on January 1, 1999, for the antibiotics still permitted as feed additives, including those permitted in poultry feeds: flavophospholipol and avilamycin. The scientific evidence presented by Sweden, as well as the conclusions of the World Health Organization and the European Union's Economic and Social Committee, led to the decision to no longer allow the use of antibiotics as growth promoters: Regulation 1831/2003 stated that antibiotics other than coccidiostats and histomonostats could be marketed and used as feed additives until December 31, 2005, after which they would be removed from the Community Register of authorised feed additives [12, 13].

The main expected outcome of the ban is a reduction in the amount of antibiotics used in animal production, and thus the risk of transferring antibiotic-resistant bacteria to humans. According to available data, the growth-promoter ban has resulted in an increase in infections and, as a result, a significant increase in the use of therapeutic antibiotics for food animals in Europe; however, the ban has also resulted in a decrease in overall antibiotic use in animals [14, 15]. Wierup also stated that in Sweden, as a result of the ban and a focus on disease prevention and proper antimicrobial use, total antibacterial drug use in animals decreased by approximately 55% between 1986 and 1999, and a relatively low prevalence of antimicrobial resistance was maintained.

In other words, the prohibition of growth promoters necessitates an improvement in farm hygiene. It was demonstrated that under good production conditions, it is possible to achieve good and competitive production results for poultry rearing without the continuous use of antibiotics in feeds. Furthermore, safer non-antimicrobial substances, such as enzymes, prebiotics, and probiotics, or diet acidification, have been studied as alternatives to antibiotics to interact with the intestinal micro flora [16-18].

Conclusion

Finally, the prohibition on antibiotics in animal feeds will have an impact on international poultry meat trade because the European Union only imports foods derived from animals that were not fed antibiotics, in accordance with the World Trade Organization's precautionary principle. However, because there is growing concern that drug-resistant pathogens could be transmitted to humans through

the food chain, it is expected that the use of antimicrobials in animal production will decrease in the coming years, at least in farms with better hygiene conditions.

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