

# Antibiotics: Trends in EU animal ag

European surveillance report notes decline in antibiotic sales, while many producers opt for alternative growth promoters such as plant extracts.

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**T**HE European Surveillance of Veterinary Antimicrobial Consumption project collects information on how antimicrobial medicines are used in animals across the European Union.

Its fourth report, published in 2014, shows a decline in sales in a large majority of countries (Table). The cited causes are the development of responsible-use campaigns, changes in animal demographics, restrictions of use and increased awareness of the threat of antimicrobial resistance.

Let's look specifically at three EU countries:

**1. Sweden.** The use of antibiotics was prohibited in Sweden in 1986, mainly for ethical reasons: to enhance breeding practices and hygiene and improve animal conditions.

The first years were difficult, with higher mortality and lower productivity reported, especially on farms where hygiene and nutrition were not well mastered. By 1999, sales of antibiotics had dropped and represented only 30% of the amount sold in 1986.

Today, Swedish farmers are using the smallest amount of antibiotics in the EU, according to the European Medicines Agency (Table). Antibiotics are used only for medical reasons and with a veterinary prescription. Farmers consider that the ban eventually turned out to be an opportunity for them to breed healthier and more productive animals.

**2. France.** With antibiotic use of 103 mg per population correction unit (PCU), France is near the European average of 111 mg/PCU. In other terms, the exposure of farm animals to any kind of antibiotics (the number and duration of treatments) has decreased 22% between 2010 and 2012. This tendency must be confirmed in the coming years.

To do so, France's Ministry of Agriculture launched the Ecoantibio plan in November 2011, with two objectives: (1) to reduce the contribution to bacterial resistance provoked by antibiotics used in veterinary medicine and (2) to preserve the veterinary medicine therapeutic arsenal on a sustainable basis, especially given that the prospects for development of new antibiotics are limited.

France aims to achieve a reduction of 25% in antibiotic use over five years by developing alternatives capable of protecting animal health while avoiding recourse to antibiotics.

**3. Netherlands.** The Netherlands reduced its use of antibiotics by 50% in three years. Prior to 2008, the

Netherlands was among the largest consumers of antibiotics.

The ministries of health and agriculture set an objective for a 20% reduction from 2009 levels in 2011, then a 50% reduction in 2013 and a 70% reduction in 2015.

The results were particularly good in pigs and poultry and were facilitated by the efforts of the major production sectors and veterinarians, who collaborated with the government to set these reduction targets for the use of antimicrobial agents in animal production.

The main key to success proved to be strict monitoring of veterinary antibiotic consumption that was set up in the farms. Farmers and veterinarians have to declare their use of antibiotics, and if an overflow is found, an improvement plan is set up together with the veterinarian.

Critical antibiotic use is, thus, well framed in the Netherlands.

A Nov. 14, 2012, report from the Ministry of Economic Affairs, Agriculture & Innovation (Colloque "Evaluer la consommation d'antibiotiques a usage veterinaire et la reduire") points out the industry's responsible antibiotic use.

For instance, it says the pig production quality system voluntarily ceased the use of third- and fourth-generation cephalosporins and fluoroquinolones in 2012. The milk industry also stopped the use of cephalosporins, and this treatment has now almost completely ended on farms in the Netherlands.

## Plant extracts

Confronted with these regulatory adjustments and pressure from the food chain, the animal production sectors had no choice but to improve their health and nutrition approaches. Part of the answer may be found in the plant kingdom, with several benefits of incorporating plants in animal feed.

Feed additives based on plant extracts aim to improve animal health and the quality of feed. Added in small quantities to the raw materials, plant extracts preserve animal health, improve ration efficiency, reduce production costs, enhance product features and reduce the environmental footprint (Les additifs pour l'alimentation animale, AFCA CIAL, September 2014).

Today, several scientific studies precisely define the benefits of using plants and plant extracts as feed additives. Their compounds are now well characterized, and their returns on investment are measurable.

**Prebiotic effect and gut flora control.** Certain citrus extracts have a prebiotic effect by promoting the growth of lactic flora (such as *Lactobacillus acidophilus*). On the other hand, they enable better flora

## European sales (in mg/PCU\*) of veterinary antimicrobial agents for food-producing species, including horses, 2010-12

Country	2010	2011	2012	2010-12, % change
Austria	63	54	55	-13
Belgium	180	175	161	-11
Bulgaria	—	93	99	7
Cyprus	—	408	397	-3
Czech Republic	94	83	80	-15
Denmark	47	43	44	-7
Estonia	66	66	56	-15
Finland	25	24	24	-4
France	132	117	103	-22
Germany	—	211	205	-3
Hungary	268	192	246	-8
Iceland	7.2	6.3	5.9	-19
Ireland	54	49	58	7
Italy	427	370	341	-20
Latvia	40	35	41	3
Lithuania	48	42	39	-18
Luxembourg	—	4	—	—
Netherlands	146	114	75	-49
Norway	4.1	3.7	3.8	-7
Poland	—	120	132	10
Portugal	178	161	157	-12
Slovakia	—	44	43	-2
Slovenia	47	46	37	-21
Spain	241	250	242	0.20
Sweden	15	14	13	-11
U.K.	68	51	66	-2

\*PCU = population correction unit, a technical unit of measurement used to estimate sales corrected by the animal population in individual countries and across countries. In this report, 1 PCU = 1 kg of different categories of livestock and slaughtered animals.  
Source: European Medicines Agency, 2014.

control by inhibiting bacteria and pathogens, especially in monogastric species.

Natural antioxidants based on certain grape extracts protect animals against free radicals, which are responsible for oxidative stress. They can be standardized in highly concentrated active polyphenols, anthocyanins and proanthocyanidins and can then diversify the antioxidant intake in the animal feed, no matter the species.

The main benefits of grape extract feed additives are to:

- Improve feed efficiency, especially for starter feed;
- Improve animal immunity by fighting against free radicals;
- Regenerate the effect of vitamin E and overcome its lack of bioavailability — grape extract supports and regenerates vitamin E and antioxidant enzymes, especially in young animals, which have an important need for antioxidants but hardly assimilate vitamin E;
- Improve meat quality by maintaining polyunsaturated fatty acids, preventing meat rancidity, stabilizing the red color and improving meat retention, leading to a more flavorful and juicier finished product, and
- Play a beneficial role in reproduction by allowing for a significant improvement of semen

quality thanks to a direct effect on the seminal plasma antioxidant capacity.

## Saponins

Saponins are secondary metabolites with numerous properties, as described in the literature: They are antibacterial, antifungal, anti-inflammatory, antiviral, manage ammonia, optimize zootechnical performance, control odor, stimulate the immune system, etc. More than 10,000 saponins have been identified in 2,000 species of plants, with specific activities (Augustin et al., 2011).

The following scheme describes the positive activity of saponins on microorganisms containing sterols into the membrane, such as rumen protozoa and *Eimeria sp.*, leading to the disruption of eukaryotic cell membranes.

Saponin-based feed additives play a key role:

- As a palatability enhancer for all animal species;
- In improving water quality and mitigating environmental impacts (aquaculture);
- In reducing stillborns and increasing weight gain at weaning, and
- In stabilizing physiological digestion (coccidiosis risk). ■

## In 60 seconds

**Label claim:** Zoetis announced a new label claim for ADVOCIN (danofloxacin mesylate) Sterile Injectable Solution for control of bovine respiratory disease (BRD) in high-risk cattle. Previously approved for treatment of BRD, Zoetis said a large, multi-site study demonstrated that ADVOCIN is safe and effective for the control of BRD in beef cattle at high risk of developing BRD. Producers can now use ADVOCIN for control of BRD in high-risk cattle on arrival or take advantage of the short, four-day withdrawal time for treating respiratory disease late in the feeding period, the company added. ADVOCIN delivers what veterinarians expect from a fluoroquinolone and now offers added flexibility to use the product in two ways.

**Equine approval:** Ceva Animal

Health announced that the Food & Drug Administration has approved its Tildren (tiludronate disodium), a novel product to control clinical signs associated with navicular syndrome in horses. Tildren has been available in some international markets for more than 12 years. "Navicular syndrome is the most common cause of chronic forelimb lameness in horses," Steve Hoffman, vice president of Ceva's Equine Business Unit, said. "The approval of Tildren by FDA provides veterinarians and horse owners with an excellent new tool for managing navicular syndrome." The primary action of Tildren is to regulate osteoclasts in areas of excessive activity. In navicular syndrome, excessive mechanical stress results in bone resorption outpacing bone formation. Tildren works at areas of active bone resorption, restoring balance to the process of bone remodeling, the announcement explained.

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