

The animal hygiene in the new century

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Abstract

Córdoba, A.; Saltijeral, J.; Pérez, J.F.: *The animal hygiene in the new century.* *Rev. vet. 17: 2, 109–112, 2006.* The objective of this work is to present a prospective viewpoint of animal hygiene in the new century. A short history of the International Society for Animal Hygiene and its recommendations to improve animal production, food protection and public health in the immediate future, are detailed.

Key words: animal hygiene, food protection, new century.

Resumen

Córdoba, A.; Saltijeral, J.; Pérez, J.F.: *La higiene animal en el nuevo siglo.* *Rev. vet. 17: 2, 109–112, 2006.* El objetivo de este trabajo fue brindar una visión prospectiva de la higiene animal en el nuevo siglo. Se presenta una corta historia de la Sociedad Internacional para la Higiene Animal y se detallan sus recomendaciones para mejorar la producción animal, la protección de los alimentos y la salud pública en el futuro inmediato.

Palabras clave: higiene animal, protección de alimentos, nuevo siglo.

A SHORT HISTORY

International Society for Animal Hygiene was founded in 1970. The first International Congress in Animal Hygiene was held in Budapest in October 1973. During 27 years, this Society organized 10 congresses in Europe and America (Budapest, Zagreb, Vienna, Strebske Pleso, Hanover, Skara, Leipzig, St Paul, Helsinki, and Maastricht). After 1994 the Society begins to work outside Europe, and the first congress organized was in USA.

In 2003 Mexico City was the first time that the International Society for Animal Hygiene organized the first Congress in a Spanish speaking country and in Latin America; animal hygiene is truly an international field of science so the Society has participants from all continents. Society is represented for 47 countries all over the world with around 500 members. They are highlighted personalities in the field of the animal hygiene in the world. India has 37 400 associate veterinarians, Japan 29 643, Korea 10 224 and Philippines 4 800².

In the Society's statute we can read "the field of animal hygiene includes the interactions between abiotic and biotic factors of environment and domestic animals, especially food animals, with the aim to prevent diseases and promote animal health and to ensure species-specific health and welfare need of all such animals". Animal hygiene is conformed by a number of different disciplines such as Physiology, Microbiol-

ogy, Pathology, Epidemiology, Animal Science, Ethology, and Welfare Animal. In summary, animal hygiene could help to find solutions to the problem of farm and companion animal.

GLOBAL SOCIETY AND ANIMAL PRODUCTION

The world economy is under a trade and technological revolution. The Internet, thriving e-commerce and other changes are transforming science, business and trade. The agreements in free trade are common in Europe (European Union, EU). Other organizations around the world are North American Free Trade Agreement (NAFTA), Andean Pact and the Mercosur of South America, while in the Pacific area we can find the APEC (Asian Pacific Economic Cooperation). The Republic of the Philippines and Mexico participate in APEC too. Up to now, the Pacific Community has 22 island member countries and territories. Organization for Economic Cooperation and Development (OCDE) is other important organization.

These agreements are linked to the World Trade Organization (WTO) established in 1995, up to now with more than 100 signatory countries. WTO was previously known as the General Agreement on Trade and Tariffs-GATT. It was established in 1948 and was the pre-eminent world body which made and monitored international trade rules.

While the percentage of poor people in developing countries declined from 29% in 1990 to 24% in 1998, there are still 1,2 billion people living on less than one

dollar a day with deep differences within and between regions¹. The differences are in animal production, animal health and food safety they are inside this global vision of the economy and the world.

The main concern of animal hygiene is animal production. In a modern vision the animal production should be guided by the concepts of animal welfare. Animal welfare is developing a high public and political profile in many countries and sometimes could be seen as an obstacle for many countries for the export of animal products, but actually is the main aspect for animal hygiene.

Other point necessary to deep studies is the consequences of animal movements on health and welfare. In animal health we should find a new balance between trade and veterinary precautions because the risks are too high. Not only international but also national trade of life animals should decrease and extra veterinary precautions should be taken. Demands on housing, housing systems and situations (vacations, transportation) of small and companion animals with the animal hygiene goal of health prophylaxis. Small and companion animals as victims and as indicators of environmental influences thus serving as indication of danger for their owners as well as the general human population living with their vicinity.

Animal waste management has posed new considerations for examining the impact of several practices on the microbiological quality of environmental sources (water, soil), animal waste itself (manure) and derivated products (waste-derived animal feeds). Hygienists we should deepen in the strategies for environmental protection and reduction of emissions in livestock production. Biosecurity is a topic most important every day.

The use of processed animal waste in feed must be reviewed in the light of potential pathogens that may occur in a given product and the potential for spreading antibiotic resistance. It is a deepening and complex problem accelerated by the overuse of antibiotics in developed nations.

It is necessary deep studies about in possible consequences of feeding animals with antibiotics as growth promoters. One example occurred in Denmark in 1998, when strains of multi drug-resistant *Salmonella typhimurium* struck 25 people, killing two of them. Cultures confirmed that the organisms were resistant to seven different antibiotics. Epidemiologists eventually traced the micro-organism to pork and to the pig herd where it originated. In 1998, 5 000 people in the United States learned the hard way about antimicrobial resistance when they fell ill with multi drug-resistant campylobacteriosis caused by contaminated chicken. The same drugs that eventually failed them had also been used in the poultry that turned up on their plates.

Currently, only half of all antibiotics produced are slated for human consumption. The other 50% are used to treat sick animals, as growth promoters in livestock, and to rid cultivated foodstuffs of various dangerous

microorganisms. This ongoing and often low-level dosing for growth and prophylaxis inevitably results in the development of resistance in bacteria in or near livestock, and also heightens fears of new resistant strains "jumping" between species.

With livestock production increasing in developing countries, reliance on antimicrobials is likewise expanding, often without guidelines in those nations where antibiotics are sold without prescription. With the trends toward globalization and the opening of trade barriers, inadequate standards and enforcement in one nation means all others are vulnerable. The way of avoiding these risks for the animal health and the health public is establishing systems of quality control at different levels like as: quality and safety assurance at farm level, quality and safety assurance at the level slaughterhouses, and control of food safety. HACCP system is a good tool to settle down and to give pursuit to the systems of quality control.

An example is quality programs in animal production to assure the consumer that he can buy animal products with a high product quality with no risks for his health are: swine production with Integrated Quality Assurance and Control (IQC) System in Netherlands, Dairy Herd Health programs in Finland and Sweden and the Program On-Farm Food Safety in USA. Each country has different quality control systems.

GLOBAL SOCIETY AND ANIMAL HEALTH

The knowledge of structure of the market of the animal health is an important fact to know the tendencies of the animal production in the world. The market of the animal health in 1998 for species was: bovine 29%, companion animals include equine 25%, pigs 21%, poultry 19%, and sheep and goat 6%.

The biological products market in animal health in 1998 was: nutritious nutritional preservatives 26.3%, additives medicals nutritious 12.0%, biological 15.1% and pharmaceuticals 46.6%. Value total was 15 250 million American dollars. Distribution of the world market of animal health in 1998 for regions in percentage was: USA and Canada 32, Western Europe 29, East Asia 17, Latin America 12, East Europe 7 and rest of the world 3.

Salyers⁴ speaks about revolutions stages in Microbiology. These revolutions have impacts in animal health. The first microbial revolution is the germ theory of disease, vaccination and antimicrobial compounds. They have a new dimension with the resistance of the microorganisms, the appearance of new serotypes and the illnesses related with the immunosuppression. The second revolution is Molecular Biology and Genetic Engineering and then impact in animal and health production, and the third revolution is discovery of the extent of microbial diversity.

The rediscovery of the enormous and almost entirely untapped wealth of microbial diversity and an emerging understanding of the importance of microbial

activities for the maintenance of plant and animal life have begun to open up new areas of investigation. New solutions to environmental problems, new industrial products and processes and new strategies for using beneficial microbes to improve the health of animals and plants. Microbial diversity has manifested itself in ways that affect human and animal health. New infectious diseases to emerge.

Modern strategies for animal health and disease are to be based on risk analysis. Application of risk analysis methodology is an important tool for veterinary scientists, administrators and advisors. This methodology has to be incorporated in all the different stages of integrated production chains with specially focus in Animal Hygiene. Protection of humans especially the owners and their families, from health risks of all types that can be caused by animals within their surroundings.

The Office International des Epizooties, OIE (World Organization for Animal Health) has 155 member countries and their OIE official delegates. This organization has 3 objectives: to inform Governmental Veterinary Services of the occurrence and course of epizootics which could endanger animal or human health, safeguarding health in world trade, and to promote and coordinate research into the surveillance and control of animal diseases throughout the world.

GLOBAL SOCIETY AND FOOD PROTECTION

Animal hygienists understand the importance of animal production methods on food quality and hygiene. The consumers have woken up to demand healthy, high quality food and also to question the methods of food production. The organic meat and organic milk are most popular in the world, especially in Europe and America.

Microbiological methods for food analysis vary from country to country. A number of international and regional associations/institutions are involved in methods validation. Unfortunately, traditional reference methods authorized by these organizations are different and protocols vary for validation of new or alternative methods among organizations.

Harmonization it is necessary because European perspective is different than American perspective two very well known examples: use hormones in beef production and use STB in milk production. Conflict between European Union and United States long running battle about hormone's treated beef. The dispute began in 1989 when the EU banned all imports of hormone treated beef. American farmers regard the growth-promoting hormone as essential for keeping their industry profitable. Use STB in milk production is banned in European Union and also Canada but in USA it is allowed.

Other example: in 1996 Avoparcin use as a growth promoter has been used in EU, and never has been approved in USA. Researches founded relations between resistance to Vancomycin resistant enterococci (VRE)

and use of Avoparcin. In 1996–1997 the incidence of VRE in foods and human intestinal contents has increased. The results in 1998 the EU banned the use of Avoparcin. Antibiotic resistant bacteria become a food safety issue.

Before these two different focuses are necessary to achieve greater global consensus on how precaution should be applied to food safety in circumstances where available scientific information is incomplete or contradictory. Today it is necessary harmonizing food safety regulations based on objective, scientifically justified criteria.

To facilitate global trade organizations such as Codex Alimentarius Commission (CAC), the principal standard-setting body in food safety, and the International Committee on Microbiological Specifications for Foods (ICMSF) continue to work toward harmonization of microbiological criteria for ensuring the safety of foods. In particular the Food and Agriculture Organization (FAO) and World Health Organization (WHO) play an important roll in to organize periodic international meetings of food safety regulators to advance the process of science-based public consultations^{3,5}.

The concept of equivalence is becoming an important consideration in the international trade of foods. With respect to food safety, equivalence is the ability of two different food safety inspection systems, using different sanitary measures, to achieve the same level of public health protection. Equivalence is a fundamental provision of the WTO Agreement on the Application of Sanitary and Phytosanitary Measures. Signatory countries have an obligation, upon request to consider equivalence of an exporting country's measures based on information provided by the exporting country and to enter into consultations with the aim of achieving equivalence o agreements for specified sanitary or phytosanitary measures⁵.

The following data justify the necessity of the equivalence concept: only 0.2% of the food that enters to it USA it is examined for microbiological contamination. FDA estimated a percentage of covering of 8% for 1992, which go down to 1.7% in 1997 in what refers to inspection of cared foods.

THE IMMEDIATE FUTURE

Today a farm apart from being economically profitable has to assist aspects related with animal health, health public and environmental health. This leads to foment the sustainable animal production that excludes the risks for the animal health, the human health and the atmosphere. The achievement of sustainable forms of agricultural production is now widely recognized by governments as a long-term policy objective in agriculture. Many countries are developing sustainable agricultural strategies, often as part of broader national environmental and sustainable development objectives.

Emphasis of free trade, uniform standards, certification of animal and animal products and germ plasma

are excellent opportunities for animal hygienists related with to the hygiene animal to insure to safe food replaced, beginning at the farm level.

High quality animal products for consumers can be produced only if farmers, veterinarians, hygienists, advisers and the industry know their responsibility in the chain. The role of slaughterhouses, dairies and food processors is very important as organizers of quality control schemes.

It is necessary rich countries will pay particular attention to the needs, opportunities and constraints in developing countries. They could be will work to strengthen them support for their capacity building to harness the potentials of biotechnology, and encourage research and development as well as data and information sharing in technologies, including those that address global food security, health, nutritional and environmental challenges and are adapted to specific conditions in these countries. The way to integrate the best scientific knowledge available into the global process of consensus building on animal production, biotechnology, animal health and food safety.

The Internet impact in our lives has to be translated in more accessibility and utility of the scientific literature, enhance scientific productivity and catalyze integration of the disparate communities of knowledge and ideas in science. Scientific journals should be

freely available through and international online public library.

Colleagues involved in the education of veterinary students must adapt to theses changes in our profession, as well the scientific changes. The number of lectures hours for the subject of animal hygiene could be been increase, like recently Germany marked.

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