November 29, 2011

Historical development of Brazilian and European legislation on beef and their relation in the international trade

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Abstract

Since the beginning of the XX century, Brazil has developed the industrial exploitation of cattle slaughtering to satisfy both internal market and exportation, mainly to European countries and USA. The laws of importing countries on cattle health and beef safety have always been a benchmark for Brazilian ones, since the very beginning of beef industry, until the promulgation of WTO-SPS agreement. The aim of this article is to compare the historical development of Brazilian and European food laws concerning beef, and to establish associations between law-making and Brazilian beef production and exportation.

Keywords: beef, exportation, legislation, international trade
1. Introduction

Since the beginning of the 21st century, Brazilian economy has been steadily increasing. Several national industries, especially in the fields of oil, cosmetics and clothes, are known worldwide. However, the fastest growth in the Brazilian economy is in the primary sector: grain, fruit and meat production has meant that Brazil is being called the "world's grain bin" (Anonymous, 2010a, 2010b, 2010c; Monteiro & Pregnaca, 2010).

The importance of the beef industry in Brazil has also grown in the last few years. Historical data since 1994 show increases in the beef production, both in terms of volume and value: the exportation of Brazilian beef produced US$ 573 million in 1994 and US$ 4,950 million in 2009 (ABIEC, 2011). According to these data, Brazil is the second largest world producer of beef, covering almost 15% of world production, following the United States. Brazil is also the first world exporter and the second world consumer (ABIEC, 2011). As reflection of this panorama, JBS-Friboi, the largest Brazilian beef processing industry, is considered the world's largest protein production industry (JBS-Friboi, 2011; Monteiro & Pregnaca, 2010).

Exports of Brazilian beef are directed to over 100 countries in the world. The highest importers are Russia and countries in North Africa and the Middle East. At the end of the 1990s, European countries were the first importers of Brazilian meat, accounting for almost 65% of the exported volume and over 70% of the value. Nowadays, according to the latest data from the Brazilian Association of Meat Exporting Companies (Associação Brasileira de Empresas Exportadoras de Carne; ABIEC, 2011), less than 10% of exported beef is directed to Europe (Figure 1), but it still generates a good income, as 14% of the export value comes from European countries. Although Europe is no longer the first market for Brazilian beef, European countries still pay more than
others to have this product, and therefore for Brazil is worthy of attention as regards their requirements and needs (Figure 2).

Considering the close trade relations with European countries in the 1990s, and the need for development and refining of legislation due to international partnerships, Brazil started a process of updating and development of its legislation concerning beef production and processing. As European countries were significant partners in this trade, European laws were naturally examples for the Brazilian development of similar laws. In addition, laws covering animal health were developed in an international context, in order to avoid the spread of important diseases, mainly both zoonoses and animal diseases, such as foot and mouth disease. At the end of the chain, the economic losses due to these problems were the most reliable justification for this updating.

2. Overview of the development of European legislation on beef

The development of European legislation on food safety and animal health cannot be separated from the history of the European Union itself, as the agricultural sector has always represented an important voice in the EU market and its budget. After the end of the Second World War, Europe faced the need to rebuild everything that the war had destroyed, including all economic sectors, from the building of new houses, to the supply of food to all citizens. In 1950, the first treaty among European countries to build a common market and to facilitate trade among states gave rise to the European Coal and Steel Community. Seven years later, the Treaty of Rome created the European Economic Community (EEC). One of the aims of the Treaty of Rome was to develop a Common Agricultural Policy (CAP), to increase the production of food at reasonable prices after the years of shortages caused by war (European Union, 2011).
During the 1960s the first laws were promulgated, to regulate the international trade of animals and products of animal origin among the states of the EEC, in order to prevent the spread of animal diseases (EEC Directive 432/1964) and to improve the trade of safe food (EEC Directive 433/1964) (Eurolex, 2011). International trade in live animals began to develop, considering the aptitude of various countries in breeding beef and the growing demand of the EEC member states. This trade increased during the 1960s, with the elimination of customs duties among EEC members when they traded with each other. As this trade inevitably increased the risk of the spread of infectious diseases among the states, the EEC regulated the commerce of live animals with Directive 462/1972 (Eurolex, 2011). Legislation mainly focused on three very important infectious diseases: brucellosis, tuberculosis, and foot and mouth disease (FMD). As the EEC began to realize the need to import meat products from countries outside the EEC, specific laws were developed to regulate the international trade in animals and food of animal origin, in order to reduce the risk of transmission of diseases. The first regulation was in 1964 (Directive 432 and 433/1964) followed by complementary laws in the following years (Directive 462/1972 and decision 542/1979), which have been modified several times since then (Eurolex, 2011). Decision 542/1979 regulated the list of foods that could be imported from other countries, including beef from Brazil. Then Directives 894/1982, 662/1989, 425/1990 and 426/1990 regulated the notification of infectious diseases, veterinary checks at borders for intra-EEC trade in live animals and food of animal origin (Eurolex, 2011). Directive 78/1997 regulated the veterinary checks to be performed on animal products entering the EEC (Eurolex, 2011). All these laws have been amended several times, in order to update them to the evolution of international trade and to advances in scientific knowledge of animal diseases.

During the 1980s, Europeans began to perceive the risk posed by chemical
contamination of the environment and of foods. Following this perception of risk by
European population (van Wezemael, et al., 2010), in 1986 the EEC fixed the maximum
acceptable levels for pesticide residues in foodstuffs of animal origin (Eurolex, 2011).
Seven years later, the concept of “contaminant” was expanded in Reg. 315/1993
(Eurolex, 2011). Maximum levels of contaminants were first determined by Reg.
last norm has been modified several times until now.
Besides the risk posed by contaminants, unintentionally present in foods, another
chemical risk is posed by drug residues. The first regulations on this matter date back to
1981 (Dir. 602/1981) and prohibit the use of substances with hormonal activity or
thyrostatic action. In 1985, this norm was supplemented by Dir. 358/1985. One year
later, the Dir. 469/1986 widened the concept of “residues” to include any “residue of
substances having a pharmacological action and of conversion products thereof and
other substances transmitted to meat and which are likely to be dangerous to human
health” including mainly antibiotics and hormones (Eurolex, 2011). In the same
directive, third countries importing live animals and meat into the EEC were required to
provide details on the monitoring plan which is put in action in the country for checking
of residues of contaminants listed in the norm. From this norm onwards, a list of
countries was set up, providing adequate information regarding authorization to import
animals and meat to Europe: Dec. EEC 15/1989 (Eurolex, 2011). Among these
countries, Brazil was present at that time, due to the existence of a national monitoring
plan for residues and contaminants in foods (see later).
In 1990 the Maastricht Treaty created the European Union (EU). However, even in the
mid-1980s, and more precisely in 1986, the United Kingdom started to detect in its
animals an increase in the number of cases of bovine spongiform encephalopathy (BSE)
(van Zwanenberg et al., 2006). The epidemic of this prionic disease opened a serious crisis in the social trust of Europeans on food safety, and a considerable fall in the international beef market. At the same time, the BSE epidemic revealed the weakness of European legislation on the traceability of animals and foods in the trade network. In order to prevent further spread of the disease, Europe reacted (Decision 469/1989) prohibiting the sale to other states of bovines born before July 1988, or born to cows positive to or suspected of BSE. In 1996, the BSE crisis deepened, when a relation between the disease and a variant of the human prionic Creutzfeld-Jakob disease (CJD) was discovered (Baker & Ridley, 1996).

In view of consumers increasing concern for food safety and quality, the EU revolutionized food legislation in 1999 introducing a new strategy for integrated inspection of the whole food chain, from feed to food sold to consumers. The scientific bases of these new strategies were set up by examining the recommendations of the Codex Alimentarius commission, and one of the first laws was EC Regulation 1760/2000, which established new rules on the identification and registration of bovines and the labelling of bovine meat, repealing the previous EC regulation, 820/1997 (Eurolex, 2011). In the initial examination of this regulation, the importance of establishing new confidence in European consumers regarding beef consumption was stated and, according to this law, must be based on transparency.

Years later, Regulation EC 1082/2003 and Regulation EC 911/2004 were implemented, giving specific indications on the proper identification of bovines, and showing the importance of traceability and origin certification as a primary tool to prevent the occurrence of diverse diseases, not only BSE (Eurolex, 2011).

The protection of animal welfare has been of concern of the European Community since the end of the 1970 decade. Since then, more than 1,700 documents were published on
this topic. The first relevant norm was the European convention for the protection of animals kept for farming purposes, from 1978. Several modifications were published since then, mainly focusing on transport, slaughtering and intensive breeding. Welfare during transport of live animals has been regulated since the Directive 628/1991, first specific law on this theme, dealing on animal welfare as a part of broader themes: veterinary checks at borders and intra-communitarian trades of live animals. Welfare during slaughter has been ruled since the Directive 119 on the protection of animal at the time of slaughtering or killing. Welfare during intensive breeding, such as in the case of calves breeding was published in 1991 with the Directive 629, laying down minimum standards for the protection of calves (Eurolex, 2011).

Despite animal production, the European legislation on foods, including beef, focused also on consumer safety, highlighting the importance of control tools such as HACCP (Hazard Analysis and Critical Control Points) and Risk Assessment, as indicated in the EU Regulations 178/2002 and 852/2004 (Eurolex, 2011). In order to give a scientific basis to European activities on food safety the grounding of the new EU food laws created the EFSA (European Food Safety Agency), by Regulation 178/2002, on the model of the American Food and Drug Administration (FDA). A key point in food safety strategy was the shifting of the responsibility for food safety from the competent authorities to food business operators. European legislation laid down minimal hygiene requirements, giving food business operators greater freedom and responsibility on how high a security level they wish to implement in their business. This shift was crucial, as it required greater knowledge of food safety and food legislation on the part of producers. The importance of food inspection by competent authorities was still out of the question, but their duty became not just to verify the quality of final products, but also to audit the compliance of food business operators to the protocols of good hygiene
practices in a discussion that was based not just on compliance with the law, but also on actual and updated scientific knowledge.

Another important sector of food legislation was the provision of criteria of microbiological safety which must be applied to foods (of animal origin). These criteria were first established by Regulation 2073/2005, later modified by Regulation 1441/2007 (Eurolex, 2011). Regulation 2073/2005 combines several previous laws establishing microbiological criteria for specific kinds of foods (as described in the considerations at the beginning of the norm) and Codex Alimentarius suggestions (Codex Alimentarius, 1997) on the establishment and application of microbiological criteria for foodstuffs. Regulations 2073/2005 and 1441/2007 are divided into two parts: the former establishes safety criteria for foods, indicating the limits of established pathogens in foods (food safety criteria); the latter limits the levels of hygiene indicator microorganisms. Concerning beef, the legislation simply indicates that *Salmonella* spp. must be absent in 25 g of a sample, as it should be in most of the foods considered by the law. In relation to processing hygiene, the norm establishes limits of total viable count bacteria (average below 3.5 log) and Enterobacteriaceae (average below 1.5 log).

A previous norm, Decision EC 471/2001 (Eurolex, 2011) established the same limits of bacterial contamination on beef carcasses and indicated the frequency of monitoring of processing hygiene that should be performed during slaughtering.

3. Development of Brazilian legislation on beef

The potential of Brazil for beef production has been known since the second half of the 19th century, when French and German industries (Brazilian Extract of Meat & Hide Company was one of the first, in 1888) built slaughterhouses and processing units for
the production of meat extract (Pardi, 1996). In order to provide food for soldiers during the first World War, American, British and Brazilian companies began to exploit the potential of Brazil for producing cattle and built the first industrial bovine slaughterhouses in the state of São Paulo, in the south-eastern region of the country, as it was the best developed in terms of cattle breeding, railways and harbours. 1914 saw the first exports of frozen, chilled, corned and salted beef, sold at the West Smithfield market in London from the first industrial abattoirs, produced by the Companhia Frigorífica e Pastoril of Barretos, a city in the state of São Paulo (Pardi, 1996).

Even with the high demand for beef from armies at war, foreign industries in Brazil were concerned to provide safe food for the soldiers and required the application of strict regulations for hygienic production of foods. In view of this, Brazilian legislation about food began to develop. In 1915 and 1921, the first laws on the inspection of meat were passed and a national system of food inspection was implemented in the entire country (Decreto 11462/1915: institution of the national inspection service of animal product factories) (Pardi, 1996). American and British standards for beef inspection were a benchmark for Brazilian veterinarians. Recognising the importance of this, in 1918 the Ministry of Agriculture passed a law supporting veterinarians to travel abroad to learn in foreign structures about breeding and food processing (Decreto 13028/1918) (Pardi, 1996). At that time, foreign industries were models to be applied to national ones, both industrial and on a smaller scale.

After the end of the First World War, the development of beef industries did not stop. In 1935, the first large-scaled industrial slaughterhouses were built in Brazil, according to European projects. The Second World War again stimulated the sector of beef processing, as Brazilian industries once more provided food for Allied and national troops. Concerns about food safety and quality were still current, improving the
production and processing systems in Brazilian slaughterhouses. In 1952, a new law set
the standards for the production of any kind of food of animal origin: “Regulamento de
Inspeção Industrial e Sanitária dos Produtos de Origem Animal” (Regulation for
Industrial and Health Inspection of Animal-Derived Products), usually called
“RIISPOA” (Brasil, 2011b). Since then, this law has been updated many times,
according to scientific discoveries, and is still the core of Brazilian food inspection

Concerning the first step of animal production, the Brazilian regulations for beef
production established animal health criteria and methods for preventing the spread of
cattle and zoonotic diseases. Brucellosis, tuberculosis and FMD were the main focus of
control in bovines. In 1965, Brazil promulgated technical rules for brucellosis
prophylaxis (Decreto 57165/1965) (Brasil, 2011b), modelled on the European law on
the same disease. Control of brucellosis was described in detail by Portaria 23 (Brasil,
2011b) mainly based on its prophylaxis, and again many years later, when a national
plan for the control and eradication of bovine brucellosis and tuberculosis was
established by the Instrução Normativa 2 (Brasil, 2011b). The prophylaxis of bovine
tuberculosis, in spite of its importance and its impact on dairy products, was not covered
by national regulations, nor were standard control procedures on a nation-wide scale set
in place, until the Instrução Normativa 2/2001 (Brasil, 2006).

First Brazilian legislation on FMD dates back to 1948 (Lei 569/1948), establishing the
compulsory nature of refunds to land-owners in case of the need to eliminate animals to
prevent the spread of infectious diseases (Brasil, 2011b), and was followed by
modifications and procedures to be undertaken when cases and outbreaks of the disease
were detected (Ofício Circular 06/2001). Finally, in 2007, a complete law established
the plan for eradication of FMD in Instrução Normativa 44/2007 (Brasil, 2011b).
Concerning BSE, the risk in Brazil is very low due to beef cattle breeding characteristics: pasture. However, European outbreaks influenced confidence in Brazilian meat, leading to publication of the *Instrução Normativa* 2 to prevent the entry of BSE and other encephalopathies into Brazil. Since then, other laws have been approved in order to guarantee the safety of Brazilian beef, such as *Portaria* 290/1997, prohibiting the use of ruminant-derived proteins in feeding ruminants, and *Portaria* 516/1997, declaring Brazil to be free from BSE (Brasil, 2011b). The *Instrução de Serviço* (service instruction, not properly a law) 1/2002 established procedures for inspection of at-risk animals at slaughtering (Brasil, 2011b). *Instrução Normativa* 8/2004 prohibited the production, marketing and sale of products destined to feed ruminants, containing proteins and fats of animal origin (Brasil, 2011b). In 2008, several laws were passed relating to BSE: *Instrução Normativa* 15 indicated protocols of action in case of suspected or confirmed scrapies; *Instrução Normativa* 34 regulated the processing and transport of animal residues, and *Instrução Normativa* 49/2008 established risk categories for BSE and classified countries by their risk of BSE (Brasil, 2011b).

Control of residues in beef began in Brazil in 1979, when *Portaria* 86/1979 was promulgated, promoting control of residues of herbicides, insecticides, antibiotics, heavy metals and hormones present in meat (Brasil, 2011b). Later, this norm was substituted by *Portaria* 51/1986, which instituted the PNCR (*Plano Nacional de Controle de Resíduos*; National Plan for Residue Control). Initially, this legislation established a simple plan for monitoring and identifying the main chemical residues most frequently found in foods of animal origin. Officially, the PNCR started in 1995, after regulation by *Portaria* 527 (Brasil, 2011b). Then *Instrução Normativa* 42/1999 modified the PNCR, detailing a specific monitoring plan developed for various foods of
animal origin. Later, *Instrução Normativa* 26/2009 established regulations for the manufacture and use of antimicrobial products intended for veterinary use. Every year, an *Instrução Normativa* is published, describing plans for checking and controlling the presence of drug residues in animal origin foods. In parallel, the Brazilian Health ministry published in 2003 a national program to control veterinary drugs residues in foodstuff, called PAMVet (*Resolução RDC* 253, *Programa Nacional de Análise de Resíduos de Medicamentos Veterinários em Alimentos Expostos ao Consumo*: National Program for Analysis of Veterinary Drugs Residues in Foodstuff), based on the recommendations of *Codex Alimentarius* in establishing the maximum residues limits of the main drugs used in animal production (Brasil, 2011a). As for PNCR, PAMVet publishes periodically results of analysis for drug residues in foodstuff. Another important aspect of Brazilian food (and beef) production is the traceability of animals and of foods of animal origin. A mission to Brazil of the European Directorate-General for Health and Consumers (DG-SANCO) commission in 2001 (DG-SANCO, 2001) noted serious deficiencies in the proper registration of animals to be slaughtered to produce beef intended for the EU market. After this audit, Brazil developed the national system of identification of animals, called “SISBOV” (*Sistema Brasileiro de Identificação e Certificação de Origem Bovina e Bubalina* - Brazilian System of Identification and Certification of Bovine and Bubaline Products) (*Instrução Normativa* 1/2002) (Brasil, 2011b), but further improvements were necessary, according to further audits in 2004 (DG-SANCO, 2004). Then, new improvements were made to SISBOV with *Instrução Normativa* 17/2006 and *Instrução Normativa* 49/2007 (Brasil, 2011b), and the last DG-SANCO audit acknowledged SISBOV as satisfactory to track the origin of beef exported to the EU (DG-SANCO, 2010). Animal welfare is discussed in three norms in Brazilian legislation: The oldest is the
Decreto Lei 24645 of 1934 which, until now, has been the only specific Brazilian law on animal welfare. Animal welfare at slaughtering is discussed by Instrução Normativa 3/2000, and also mentioned in general form in Instrução Normativa 64/2008 on organic agriculture (Brasil, 2011b).

Brazilian legislation also followed international tendencies to control the quality and safety of animal origin products in food chain. Concerning this, two Portarias published in 1997 (326/1997 and 368/1997) (Brasil, 2011a, 2011b) established requirements for hygienic production of foods. One year later, another Portaria (46/1998) indicated that the HACCP approach to food risk should gradually be implemented by food-producing industries. The importance of using the HACCP strategy was again highlighted in Decreto 5741/2006 which instituted the SUASA (Sistema Único de Atenção a Sanidade Agropecuária - Unified System of Attention to Agricultural and Livestock Health). The development of SUASA was a very important step in the development of Brazilian agriculture and animal production sectors. It had already been planned 15 years earlier in law 8171/1991 (Brasil, 2011b) on agricultural policy. SUASA was also named as the body responsible for the development of Risk Analysis programs and studies for foods produced in Brazil.

In order to render uniform the Brazilian approach to HACCP plans for constructions and auditing in meat industries, in 2005 Brazil issued two Circulares: 175 and 176. The first fits the approach to the inspection of HACCP plans by the competent authorities, giving specific indications for any sector of a beef industry, and supplying specific references to European CE and American USDA regulations. The latter specifies how inspections and auditing in beef production plants should be performed. These two norms are “operative guides” for inspectors, which are very useful in the proper conduct of industrial inspection (Brasil, 2011b).
Lastly, details of the required microbiological control of foods for human consumption were published by Ministry of Health, first through Portaria 451/1997 and later modified by Resolução-RDC 12/2001 (Brasil, 2011a), which is still valid. The food safety requirement for beef is only the absence of *Salmonella* in any 25 grams of product. Hygiene requirements were not considered for beef, but only for meat preparations, in which a maximum of $10^4$ heat-tolerant coliforms was established. *Instrução Normativa* 40/2005 established standard methods for the isolation of *Salmonella* in foods and *Instrução Normativa* 9/2009 those for the isolation and control of *Listeria monocytogenes* in ready-to-eat foods (Brasil, 2011a).

4. Considerations of Brazilian and European laws concerning beef

As the historical development of European and Brazilian legislation on animal health and food safety shows, both cover the same themes under current legislation. From the historical point of view, it can be seen how Brazilian industry of beef cattle breeding and meat processing has always been driven by the necessity to maintain the access to external markets. The importance of the European model for the Brazilian lawgivers is confirmed as these legislations developed together, covering the same themes, often in the same periods. Figures 3, 4 and 5 show the chronology of the main laws related to beef production, covering the subject areas considered in this study. The requirements of European markets have stimulated the Brazilian government to cover specific themes of legislation, as happened for animal identification and traceability. At present, as revealed by the latest EU audit on the production of beef and certification procedures (DG-SANCO, 2010), the Brazilian situation on farms, beef slaughterhouses and bovine certification is considered satisfactory, indicating a complete correspondence between
European and Brazilian laws.

Considering the publication of laws on specific themes, it can be verified that the trade in beef between Brazil and EU countries varied according to some key events. Since 1996, two periods which may be considered critical occurred: the first was between 1996 and 2002, and the second began in 2007 and is still ongoing (Figures 1, 2). The first crisis in the beef market was associated to the BSE crisis: the correlation between BSE and the human variant, Creutzfeld-Jakobs disease (vCJD), was discovered in 1996 and this event awarded the public (van Wezemael, et al., 2010), leading to a dramatic reduction in the European and global consumption of beef (Leemig & Turner, 2004; Lloyd et al., 2006; Pennings et al., 2002). The critical situation also led to a fall in beef prices, from US$ 3.28 to US$ 2.38 per kg (Figure 2). The market for beef from countries such as Brazil, which has extensive pasture land, was less affected by the BSE crisis. Brazil took advantage of this situation and, even with falling prices, increased its exports in terms of exported weight (Figure 1). In the same period, several laws concerning BSE were passed (Figure 3) both in Europe and in Brazil indicating the alertness of regulatory organs to control it.

The second crisis has lasted since 2007. The triggering cause was the bursting of the US housing bubble, which had peaked between 2005 and 2006. After the collapse of the American housing market, there was a rapid increase in the prices of several commodities in common use, such as copper, nickel and oil. As these commodities indirectly affect many aspects of the everyday economy, the result was an increase of the cost of living, which in turn affected the consumption of “luxury goods” such as beef. Since 2006, there has been a sharp decrease in exports to Europe and a decrease in the bills. During this period, the price of Brazilian beef increased substantially, from US$ 3.49 to US$ 5.51 per kg showing how beef represent an alternative economic
commodity on which it can be invested.

The internal consumption of beef in Brazil showed similar increases in meat prices (ABIÉC, 2011), but it was caused by the opposite reason: Brazil has been not greatly affected from the global recession and is experiencing a period of intense economic growth. This positive situation has increased personal incomes, so that most Brazilians can now spend more money on luxury goods, such as the frequent consumption of beef.

The breeding of beef cattle is still inadequate to satisfy the Brazilians growing demand for beef and therefore prices are rising.

Another point to be stressed about law updating is the Health and Phyto-Sanitary Agreement (SPS), signed by all member countries of the World Trade Organization (WTO, 2011). According to this agreement, all WTO member countries are obliged to establish health measures to protect the life or health of humans, animals and plants. WTO members are committed to follow the principles of Risk Analysis and to harmonize their regulations according to the standards indicated by the World Organization for Animal Health as regards animal health, and the Codex alimentarius as regards food hygiene and protection (WTO, 2011). One fundamental point of this agreement is complete transparency of the governments. At any time, a government can propose a new law or a modification, which could influence international trade. When a modification is adopted in one WTO member country, the WTO must be notified in order to inform all other governments, to preserve the transparency of the agreement. As a result, several proposals for adjusting existing regulations have been registered by the WTO, mainly by already developed countries, such as those of Europe, which today play the role of importers (Galli et al., 2005). According to this evidence, it may be stated that international standards of animal health and food safety mainly follow the needs of developed countries.
Besides comparisons of themes covered by European and Brazilian legislation, deeper insight is needed of the different approach used for food inspections by the two legislations. Brazilian legislation has many highly detailed regulations covering every sector of food production, including a great number of “Regulamentos Técnicos de Identidade e Qualidade” (Technical Regulations of Identity and Quality, RTIQ) describing how specific foods must be produced. For Brazilian law, little freedom is given to producers to develop autonomous, voluntary, food safety standards, assigning crucial importance to the activity of the competent authorities to guarantee the safety of foods. Conversely, European food legislation has undergone a process of simplification in recent years: initially, the laws were complex and covered the theme of legislation in depth, and now food laws only state basic requirements, giving food producers autonomy and the responsibility to develop private food security protocols and their own good hygiene practices, according to the specificity of their production and personal risk analysis. The basis of EU food legislation is to fit hygienic requirements to the size and characteristics of the food industries, but this requires high awareness and a sense of responsibility by food producers.

The former (Brazilian) system, due to its considerable detail, is highly bureaucratic, requiring much effort by food producers to comply with the entire legislation and high costs, both for the implementation of security systems and for their work. The effort to develop food security at “European Level” is both a benchmark for the development of the Brazilian food sector (Jongwanich, 2009) and a barrier for the legalization of the entire food production chain, most especially for small-scale producers, who cannot afford the costs required for implementing the HACCP systems, nor can they understand the utility of these requirements (van Veen, 2005). Flexibility is a keyword which should be indicated in the Brazilian situation, to keep the highly demanding
European markets open and to ensure at least basic food safety standards at all levels of internal markets.

However, Brazil can no longer be defined as a developing country. Its fast economic growth and the improved social conditions of most of the population mean that more beef has been available in recent years. The perception of food quality and food safety is still not balanced in the population, like the availability of inspected food, especially outside the large cities. The Brazilian legal basis of food safety has been historically shaped according to the requirements of those more developed countries which imported Brazilian foods. Importing countries have always had higher standards of food safety, mirror of a “culture” of food safety and hygiene, which cannot be simply translated into another language in order to be applied to the complex Brazilian reality (Jongwanich, 2009; van Veen, 2005).

The very rapid economic and social development of Brazil has been faster than the development of efficient control systems for food safety and, perhaps more importantly, of a social awareness about it. Such developments are very expensive and require time, considering the great size of the country, the extreme fragmentation of the food production sector, and the complexity of skills needed for this purpose, both among food producers and competent authorities. Further steps should be taken by Brazilian policies to apply the strict requirements of importing countries to exporting trades and to develop a simpler, legislation, more economic to manage, to ensure both the access of the entire population of this continent-sized country to safe foods and to give it leadership in international markets for red meat. This statement might seem a reversion to a lower evolution state of national food safety policy but, on the contrary, might be an evolution toward a higher compliance of food producers and sellers to the aims of food security and safety.
Acknowledgments

A. Lafisca is supported by CNPq. L.A. Nero and P.S.A. Pinto are supported by CNPq and FAPEMIG.

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DG-SANCO. (2010). Final report of a mission carried out in Brazil from 02 to 15 March 2010 in order to evaluate the operation of controls over the production of bovine meat intended for export to the European Union as well as certification procedures.


Figure captions

Figure 1. Evolution of Brazilian beef exportation (total and to European Union countries) between 1996 and 2010 (in 1,000 tons; ABIEC, 2011).

Figure 2. Value paid per ton of Brazilian beef globally and by European Union countries (ABIEC, 2011).

Figure 3. Main laws on animal diseases and animal identification from European Union and Brazil.

Figure 4. Main regulations on chemical residues on animal origin foods from European Union and Brazil.

Figure 5. Main regulations on food safety, quality and animal welfare from European Union and Brazil.
Figure 1
Figure 2
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<td>Directive 78/1997 - Check for products entering the community from third countries</td>
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Figure 3
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<th>Decade</th>
<th>Brazil</th>
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<td>1960</td>
<td>Portaria 86/1979 Control of residuals in foodstuffs</td>
<td>1957 - Treaty of Rome: European Economic Community</td>
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<td>1990</td>
<td>Instrução Normativa 42/1999 Sampling plan for PNCR</td>
<td>Directive 363/1986 - Maximum levels for pesticide residuals in or on foodstuffs of animal origin</td>
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<td>2000</td>
<td>Resolução RDC 253/2003 PAMvet National Program for Analysis of Veterinary Drugs Residues in Foodstuff</td>
<td>Directive 469/1986 Examination of animals and fresh meat for the presence of residuals</td>
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Figure 4
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<th>Europe</th>
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<th>Brazil</th>
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<td>1950 - Foundation of the “European Coal and Steel Community”</td>
<td>1950</td>
<td>Portaria 451/1987 microbial requirements for foodstuffs</td>
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<td>1970 - Foundation of the “European Coal and Steel Community”</td>
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<td>Portaria 268/1997 - Hygiene on food production</td>
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<td>2000 - Publication of the White paper on food safety</td>
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<td>Decreto 5741/2006 - Unified System of Attention to Agricultural and Livestock Sanity (SUASA): HACCP and Risk Analysis</td>
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<td>Regulation EC 1760/2000 - General rules for food safety and labeling</td>
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<td>Instrução Normativa 64/2008 - Organic agriculture and animal welfare</td>
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<td>Regulation EC 178/2002 - Creation of European Food Safety Authority</td>
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<td>Regulation EC 178/2002 - HACCP</td>
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<td>Regulation EC 852/2004 - Risk Analysis, Risk Assessment</td>
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<td>Regulation EC 911/2004 - Traceability</td>
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Figure 5
Appendix - Cited legislation

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