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EPIDEMIOLOGIC APPROACH IN FOOD HYGIENE: THE EXAMPLE OF LISTERIOSIS – AEEMA Meeting, 13th May 1993

The interest of *L. monocytogenes* typing in epidemiological watch of human listeriosis in France
Rocourt (J) & Jacquet (C)
The surveillance of Listeriosis in France is realized through two institutions: Public Heath National Network and Reference National Centers (RNC). The aim of the RNC is: evaluation of annual incidence, detection of outbreaks and of real epidemics, all from the strains sent by biologists. To do that, the Institut Pasteur RNC uses phenotypical and molecular typing methods. During the French epidemic of 1992, they showed their value.

Human listeriosis: Knowledge about means of contamination out the outbreaks of 1992
Lepoutre-Toulemon (A)
Human listeriosis is a bacterial disease, affecting preferentially fragile individuals (pregnant women, immune depressed and aged people). Listeriosis is not frequent, but it is a severe disease, as it leads to death in 25 to 35 % of cases. The ways of contamination have been ill-known for a long time. The importance of foodborne infection in human cases has been revealed at the occasion of listeriosis outbreaks. In France, the first food-originated outbreaks have been described in 1983 and 1985. In 1992, the country has known a very severe outbreak. This outbreak lasted 9 months (from March to December, 1992). Considerable human and material means were set to investigation by the three government departments which were concerned (Agriculture, Health and Finance). The aliment responsible for the outbreak was jellied pork tongue. In total, 279 cases have been described, of which 83 had deadly consequences.

Epidemiology of *Listeria monocytogenes* in living organisms and in the environment
Bind (J-L) & Delaval (J)
After their description of the typical features of *Listeria*, such as the large repartition in the environment, the outside resistance of the germ, or the carriage by the superior organisms, the authors tackle the Listeria descriptive epidemiology in human race or in animals, without disregarding the problems linked with the contamination by the plants. Examples from several species show different aspects of analytical epidemiology. Hypothesises concerning pig contamination, from breeding to slaughterhouse, are developed. Then, the authors show the results of an investigation dealing with the contamination of cow milk in the farms, in order to finish with a study about the contamination of foodstuffs eaten by voluntaries, during their daily meals. Most of the observations confirm the predominant part of foodstuffs in human or animal contaminations by Listeria.

Epidemiology of *Listeria monocytogenes* in food stuffs
Lahellec (C)
The epidemiology of *Listeria monocytogenes* in foodstuffs can be approached in a way very similar to the one used for other foodstuff pathogens. The following examples, concerning only foodstuffs from animal origin, show that whatever the origin of the contamination, the contamination of live stock is really at a very low level. Molecular tracers allow now to compare strains. Different internal (composition, pH, Aw) or external (temperature, gaseous atmosphere) factors will influence the late development of Listeria monocytogenes. In the same way, competitive flora, presence or not of natural or introduced anti Listeria agents will play a real part in the final contamination of products. The

evolution of technology, especially frequent lower scales for pasteurization, the new products, the new stocking facilities, will play a part in the appearance of new risks. It seems indispensable to develop fast, cheap, safe, reproducible methods to increase the number of controls. These controls, seen in the field of risks assessment, will give to the consumer a larger alimentary security.

Prophylaxis of *Listeria monocytogenes* infections in living organisms
Schelcher (F) & Sanaa (M)
L. monocytogenes is an ubiquitous bacteria: Foodborne infection is very frequent in humans. In Ruminants, silage is highly associated with Listeriosis. Vaccination has a very low efficacy. So in these species practically prevention measures are based on good quality silage. Individual non-specific resistance seems very difficult to monitor and sometimes to improve. *L. monocytogenes* in the milk causes principally from environmental sources but also from specific mastitis. Hygienic prevention seems necessary to control *L. monocytogenes* contamination particularly in the milk parlor. Actually Listeria mastitis are poorly characterised. Females with mastitis must be identified and culled.

The control of Listeria contamination in the food industry
Cox (L-J)
The control of Listeria contamination has many points in common with the control of any microbial contamination except that it is probably much more tenacious than the majority of microorganisms. Dividing a factory into zones of different hygienic quality, efficient separation of these zones and elimination of vectors are the measures to be applied along with efficient cleaning and disinfection and elimination of unnecessary wet areas and points of residue build-up. In cases where a problem has not been foreseen, sampling of the factory should be carried out and the points of contamination identified. The critical points are those that have direct contact with the product. Successful control is characterised by reduction in contamination which follows an exponential curve. These concepts of control are illustrated using the example of Listeria in frankfurter production.

EPIDEMIOLOGIC SITUATION OF SOME ANIMAL INFECTIOUS DISEASES IN 1992

Aujeszky's disease in France in 1992
Toma (B), Mieli (L), Caquineau (L), David (C), Martin (D), Guillotin (J), Michel (B) & Picard (M)
This paper presents the epidemiological situation for Aujeszky disease in France during 1992, using tables and figures. The tracers used show that the situations for 1991and 1992 are similar.

Results of actions against enzootic bovine leucosis in France in 1992
Dufour (B), Coudert (M) & Vaucel (D)
The state of the measures taken in France against EBL in 1992 is presented with the help of tables and figures provided by the "*Direction Générale de l'Alimentation*". From the indexes here used (infection rate, clinical outbreaks, culling…), it is possible to appreciate the fast improving of the situation for this disease. Nevertheless, there is still some work to do in the field of qualification of herds and of areas.

Rabies in France and in Europe in 1992
Aubert (M)
The epidemiological situation of rabies in France and in Europe during 1992 is presented from tables, maps and graphs. Some new scientific and technical information's, in the field of epidemiology or control of rabies, are documented.

Situation of bovine tuberculosis in France in 1992

Bénet (J-J)

During 1992, 442,000 cattle herds, *i.e.* 18.5 millions of came have been tested against tuberculosis. Annual prevalence percentage of infected herds was 0.32 %, the one for point prevalence on December 31st 0.16% and incidence rate was 0.16 %. The rate for infected animals was 2.5 out of 10,000. The proportion of nn-marked animals being seized was 19.8 %. The proportion of whole seizure on all the seizures was 16.5 %. General situation is good in many French departments. Control of health status of cattle introduced in healthy herds must be the main preoccupation of owners. Veterinary Services should monitor quality of epidemiological data

Animal brucellosis in France in 1992

Garin-Bastuji (B), Gerbier (G), Verger (JM), Douzal (Y), Grayon (M), Thiebaud (M) & Moutou (F)

The situation of cattle, sheep and goat brucellosis in France during 1992 is explained with the help of maps, tables and figures. The indexes here used show an improvement of the sanitary situation. The results of a descriptive epidemiological survey are also presented. It had been carried out in the 12 French departments where non-specific serological reactions had been notified in cattle during the 1991-1992 national brucellosis serology annual campaign. The results show that the phenomenon keeps the same importance in term of non-specific reacting herd rates per department (2.37 p. cent during 1991-1992 season vs. 2.72 p. cent during 1990-1991 season) and in term of non-specific reacting animals rates within hem's (2.64 p. cent during 1991-1992 season vs 3.76 p. cent during 1990-1991 season). Then the presentation of all Brucella strains isolated from animals in France is made. *Brucella abortus* biovar 3 and *Brucella melitensis* biovar 3 are the strains the more found, in cattle and small ruminants respectively. The importance of *Brucella melitensis* biovar 3 in cattle becomes preponderant in cattle in the South East of France, where brucellosis is enzootic in sheep and goats.

The evolution of epidemiological sanitary situation in Belgium

Dubois (C), de Coninck (V) & Lengelé (L)

The epidemiological situation in Belgium for the year 1992 as well as its evolution during the past years, are presented in maps, tables and curves. The aimed diseases are: rabies, bovine brucellosis, enzootic bovine Brucellosis and bovine tuberculosis.

Animal infectious disease: epidemiological situation in Switzerland

Stark (KDC) & Hauser (R)

The paper presents the epidemiologic situation for infectious diseases in animals in Switzerland during 1992, using tables and figures. No cases of OIE 'A' list diseases have been reported. For rabies, IBR, EBL, tuberculosis, brucellosis, CEM and Aujeszky's disease, the favourable situation of the preceding years could be maintained. Only BSE cases have been reported more frequently than before. The voluntary reporting system EQUINELLA for monitoring of infectious equine diseases is described.

Animal health in Portugal, 1992

Louza (A-C)

A general overview of the animal health of Portuguese livestock is presented and referred to 1992 based on official public records and publications. The main problems, related with the activity of the livestock sub-sector, raised during the transitional period negotiated by Portugal with the EC, which ended in December 1992, are outlined and discussed. Both the livestock sub-sector and the corresponding animal health structures are quantified and described. The present organization of the Ministry of Agriculture and its influence on the sanitary chain of decision at local, regional and central levels is presented. Animal health panorama of different food and leisure species is shown referring

either to the obligatory sanitary programmes or to the facultative prophylactic activities of the main diseases affecting Portuguese animal production systems.

PAPER OF EPIDEMIOLOGY

Epidemiology of milk contamination by *Listeria monocytogenes* in the farm
Sanaa (M)
An epidemiologic study was undertaken to determine the incidence and origin of *Listeria monocytogenes* in raw bulk tank milk in a limited geographic area in France. The prevalence of Listeria monocytogenes was low (3%). The first step was a case/control survey involving 128 selected dairy farms. The objective was to assess the association of a number of suspected risk factors upon the odds of the contamination of raw milk by *Listeria monocytogenes*. Poor quality of silage, inadequate frequency of cleaning the exercise area, poor cow cleanliness, insufficient lighting of milking barns and pastors and incorrect disinfection of the towels between milking were conditionally associated with milk contamination. The association between faecal material, silage and raw milk was examined on 24 case farms and 26 control farms (second step). Faecal material and silage were considered to be a potential source of raw milk contamination by Listeria monocytogenes. Seasonal variation of the occurrence of *Listeria monocytogenes* in the raw bulk tank was examined on 62 cases farms (third step) during a period of two years. Possible sources of exogenous and endogenous contamination of raw milk was investigated on 33 dairy farms. The most common Listeria monocytogenes isolates from dairy environment belonged to serogroup 1/2 (87%). Isolates of serogroup 4 were not observed from silage and were infrequently from faeces and teats. During the course of our investigation, three herds were found to contain one animal with subclinical mastitis caused by *Listeria monocytogenes* serogroup 1/2 in one case and serogroup 4 in two cases. When we interpreted the results of phage typing on matching strains isolated from tank milk with those recovered from quarter milk and environmental samples, we observed a good agreement between the source strains and raw tank milk strains.