
PAPER

Microbiological analysis of foods in France: standardized methods and validated methods

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From a historic situation of total absence of official methods for the microbiological control of foods and the progressive development of the standardization of analysis methods, the French authorities responsible for controlling the hygiene of food products have today entrusted AFNOR with the task of working out analysis methods to be used within the framework of official controls, explicitly making reference, in the statutory texts, to the standardized methods. So-called 'routine' standardized methods and commercial methods validated by AFNOR are also used for routine controls. The French system of reference is consistent with the international and European standardized system of reference methods and the MicroVal project will give a European dimension to the certification, by AFNOR, of the commercial methods. Copyright © 1996 Elsevier Science Ltd.

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INTRODUCTION

Ensuring the hygienic quality of foods is a major preoccupation of the French authorities, who adhere to the approach of the Codex Alimentarius Committee for Food Hygiene (CCFH) for the defining of microbiological criteria, thereby making it possible to guarantee the innocuity of the foods. The defining of a microbiological criterion cannot be carried out without combining it with a given method of analysis, because the result of the analysis depends considerably on the selected method (culture media, incubation conditions, identification etc). Establishing a reference method for

each criterion is therefore essential in order to be able to conduct harmonized and reliable control of food.

As the CCFH does not itself define methods of analysis, but instead refers to methods evaluated by international organizations, the French authorities also make reference to the methods standardized by AFNOR.

The need for rapid methods is being increasingly felt. Numerous methods are currently commercialized and both the method manufacturers and the authorities have requested AFNOR to set up a system for validating the commercialized methods.

DEVELOPMENT OF MICROBIOLOGICAL METHODS FOR THE OFFICIAL CONTROL OF FOOD PRODUCTS: HISTORICAL SUMMARY

The two authorities responsible in France for controll-

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ing the hygiene of food products are the Directorate-General for Food (DGAL) and its Veterinary Services, within the Ministry for Agriculture, Fisheries and Food, and the Directorate-General for Competition, Consumption and Repression of Fraud (DGCCRF) attached to the Ministry for Economic Affairs. These two structures lay down the standard microbiological criteria (within the meaning of the CCFH), by basing themselves on the recommendations of the High Council for Public Hygiene, under the responsibility of the Ministry for Public Health. This activity follows closely on decisions taken by the European Commission (EC).

Reference methods

Prior to 1979, no official methods existed and each service (DGAL and DGCCRF) used its own methods, the majority of them not being formalized in writing. At the same time and without any formal official recognition, a microbiological methods standardization activity developed within AFNOR, first of all sector-based methods (meats, edible gelatine, spices in the 1960s), then horizontal methods (launching of the V 08 B 'Food Microbiology' Standards Committee in 1973, together with the concomitant creation in 1974 at France's request of the SC 9 'Microbiology' subcommittee of the TC 34 'Agricultural Food Products' Technical Committee - ISO/TC 34/SC 9).

The approach of drawing up statutory criteria and of reference methods of analysis, led to the publication of a decree on 21 December 1979 [1] in which official methods were drafted; and, for the first time, an explicit reference to standardized methods, in particular in the case of expertize, was made. An agreement was signed in 1988 between the DGCCRF and AFNOR in order to avoid duplication of the work (standardized methods/official methods).

Today, the authorities have clearly chosen the standardization channel for drawing up microbiological methods of analysis: this system makes it possible to ensure a consensus of all partners involved and offers the possibility of drawing up a harmonized system of reference at international level. Thus, both the DGAL and the DGCCRF systematically make reference to the standards drawn up by AFNOR for analysis methods to be used in the microbiological control of foods by their services (e.g. vegetable products or products of plant origin [2] or dairy products [3], except in exceptional cases (emergency situations), where the two directorates may themselves publish 'official' methods (for the enumeration of *Listeria monocytogenes* for example).

The authorities did not only wish to draw up a national system of reference, since they requested AFNOR, together with financial backing, to take on the responsibility of the ISO/TC 34/SC 9 subcommittee and this out of concern for harmonizing the exchange of food products at international level. More recently in 1992, still at the request of the authorities, AFNOR took on the Secretariat of the WG 6 'Microbiological contamination' Working Group of the CEN/TC 275

'Food Analysis - Horizontal Methods' Technical Committee and this with the purpose of ensuring a coherence between the international and European system of reference (transposal of the ISO standards into CEN ones, parallel adoption at CEN and ISO of the new standards).

Without limiting itself to the official controls, the reference to standards was reinforced by the development of accreditation which is based, particularly in France, on the AFNOR microbiological analysis standards.

The European situation is developing in the same direction. The European Commission (particularly its Veterinary Service within the DG VI 'Agriculture' Directorate-General) had a tendency to write its own methods. Today, it makes reference to the ISO standards (awaiting the publication of the CEN ones). One recent example is the explicit reference to the ISO 6579 standard for the detection of *Salmonella* in poultry [4].

Alternative methods

By alternative method is meant a method that is used instead of a reference one. In the case of microbiological analysis, in France two types of alternative methods are distinguished: routine standardized methods; and 'rapid' methods validated by AFNOR.

Routine standardized methods

Taking into account both the need on the part of official, private and industry laboratories to be able to conduct controls on products on a routine basis, and the request, stemming from COFRAC (French Committee for Accreditation), for having methods capable of being used on an everyday basis, AFNOR has been standardizing since 1992 a series of so-called 'routine' methods, which were simplified in comparison to the reference ones.

'Rapid' methods validated by AFNOR

With the development of new analytical techniques, numerous rapid methods have been commercialized with the view to replacing the traditional methods of microbiology. The users of these methods (both public laboratories for routine control, and agrofood industry laboratories within the general context of quality management and production process control) required guarantees and they requested AFNOR to set up in 1989 a validation system for these commercial methods in order to be able to ensure by third party that these said methods provide results that are equivalent to those obtained with the corresponding reference ones.

'FORCE OF LAW' OF THE MICROBIOLOGICAL METHODS OF ANALYSIS

The 'official' methods which exist are of course of mandatory application. As regards the standardized

methods or the methods validated by AFNOR, their application is voluntary; they acquire a 'force of law' if they are explicitly mentioned in an official text. This text may be purely French; it is the case of all of the reference methods used for the control conducted by the DGCCRF on vegetable products [2]. It is also the case of the standardized reference methods and routine methods, as well as of commercial kit validated by AFNOR for the analysis of dairy products [3]. The text may also stem from the European Commission like, for example, the detection of *Salmonella* in poultry [4].

Without being necessarily quoted in official texts, the standardized routine methods or the commercial methods validated by AFNOR are used in particular by official laboratories within the framework of routine controls (for the domestic market and in the absence of need for expertise).

PROCESS OF DRAWING UP AND OF RECOGNITION OF THE METHODS USED FOR THE OFFICIAL CONTROL OF FOOD

Within the context of this paper and in order to avoid any and all confusion, we reserve the term 'validation' for the process of validation by AFNOR of the commercial methods.

Standardized reference methods – routine methods

While the recognition of the methods used for the official controls remains in the hands of the DGAL and the DGCCRF, the drawing up and approval of the standardized methods is conducted within AFNOR.

The principal criterion for the drawing up and approval of a standardized method is, like any standard, the achievement of the widest possible consensus among all the interested parties in France, whether it be for a purely French standard or for the transposal of an international standard into a French one.

Traditionally, a consensus on the part of experts was sufficient for standardizing a method. Nowadays, with the aim, in particular, of meeting the requirements of the CCFH (to have at one's disposal methods of which the reliability is known) the standardization of analysis methods is becoming increasingly more rigorous and a standard will not be able to be drawn up if one does not have at one's disposal at least several scientific publications on the method. Even if interlaboratory tests are not yet organized, testing of the method in several laboratories with different samples is carried out (ISO/TC 34/SC 9 has henceforth given itself this requirement for adopting any method).

Today, the bulk of the standardization activity in microbiology is focused on horizontal methods (applicable to all food products). Indeed, the experts realized that, in the majority of cases, variations (incubation, growth media etc) between several analysis methods for a given microorganism were unjustified as a function of the food product under consideration. Only the

sample preparation method varied. The drawing up of horizontal methods allows a harmonization of the methods, facilitates the work of laboratories which must control a wide variety of products and makes it possible to meet the expectations of the CCFH, which gives greater place to the horizontal methods.

The V 08 B 'Food microbiology' standardization committee is responsible for this task. It gathers together the different partners involved (food industry, manufacturers of 'rapid' methods, official laboratories, private laboratories, research institutes). Its mission is to manage specifically French standardization work, to ensure its possible presentation at international level and to organize the international and European work.

The reference methods are constituted by an identical transposal of the ISO standards drawn up by the ISO/TC 34/SC 9 subcommittee. A series of standards has just been revised; the basic GPL standard in food microbiology (ISO 7218) has been thoroughly revised and enriched (published in February 1996). The standard on the enumeration of *Clostridium perfringens* (ISO 7932) is currently undergoing revision (with the inclusion of the L.S. medium for confirmation), as well as the standard on the enumeration of *Staphylococcus aureus* (addition of an alternative method, stemming from the IDF, using a rabbit plasma and fibrinogen medium). Two new standards were published in 1995: thermotolerant *Campylobacter* (ISO 10272) and *Yersinia enterocolitica* (ISO 10273). A standard on the detection for *Listeria monocytogenes* is in the final stage of preparation (ISO/DIS 11290-1) and a standard on enumeration is under preparation (ISO/CD 11290-2) (tests are currently under way in order to draw up the final version).

To date, 11 routine methods have been standardized. They mainly consist of a simplification of the reference methods (e.g. use of one dish per dilution instead of two). In the case of the enumeration of *Escherichia coli*, the routine method (V 08-053) sees the introduction of new commercialized media (MUG and PTG).

The sectorial analysis methods are today being studied in three fields: meats, milk and canned food. It is essentially a question of following the international work of ISO/TC 34/SC 6 'Agricultural food products – meat and meat products' and of ISO/TC 34/SC 5 'Agricultural food products – milk and milk products' which retranscribes the IDF standards. A part of these standards is transposed into French standards. A working group of the V 08 B Committee is updating all of the standards concerning the microbiology of canned foods.

AFNOR validation of the 'rapid' methods

Definition

In the frame of our article, a 'rapid method' is a commercial alternative method used to analyse or estimate the same value as measured by the corresponding reference method, for a given field of applica-

tion, and has one or more of the following characteristics:

- rapid analysis and/or results;
 - simple and/or automated procedure;
 - analytical characteristics.
- (Cf. standard NF V03-100).

A 'reference method' is a standardized or official method. The purpose of AFNOR validation is to confirm, through an objective third party, that the results obtained using specific rapid commercial methods are comparable to those obtained using reference methods.

These methods concern the measurement of physical properties, quantitative determination and detection of chemical, biochemical and microbiological substances. At the same time, AFNOR validation concerns:

- the procedure recommended by the manufacturer for all equipment and products necessary to perform the tests required to implement the method; and
- a defined scope.

AFNOR's validation procedure uses the French Standards V 03-100, V 03-110 and V 03-111 [5].

Management bodies

- (i) AFNOR is responsible for the implementation of method validation and for overall administration.
- (ii) The Validation Committee issues recommendations on the general operation of the validation procedure. It is made up of members of government bodies, associations, public, independent and professional laboratories, and representatives of the manufacturers of rapid methods.
- (iii) The Technical Boards are in charge of providing technical information for application files. They advise AFNOR on its decisions. At present there are two Technical Boards: a 'Microbiology' Technical Board (formed in 1989); and a 'Physico-chemical' Technical Board (formed in 1991).
- (iv) The expert laboratories: any person requesting validation must appoint an independent, public or private expert laboratory of their choice, which is qualified by AFNOR for its competence in the given field. This laboratory shall represent the person/persons requesting validation before the Technical Board. It is responsible for supervising the preliminary study and collaborative study of the method proposed for validation, and for presenting both studies to the Technical Board.
- (v) Auditors are authorized by AFNOR to conduct audits on the methods' production sites.

Validation procedure

A rapid method of analysis is validated on the basis of a preliminary study, a collaborative study and an audit.

Preliminary study. The aim of a preliminary study is to compare the performance results obtained using the rapid method proposed for validation with the refer-

ence method. The expert laboratory carries out tests to determine the criteria defined in standards, and which for microbiological qualitative methods are: specificity, trueness and repeatability in the expert laboratory (for the rapid method and the reference method), except for the specificity only for the rapid method; and speed of use and preparation. The laboratory also draws up a precise description of the method and a bibliographical review. A draft preliminary study is first presented to the Technical Board which in turn discusses the procedures. This first stage also allows the Board to determine whether the rapid method falls within the field of application of AFNOR validation. When the preliminary study is completed, the expert laboratory presents the results obtained and their analysis to the Technical Board. The Board then advises AFNOR on what steps are to be taken: if the results obtained using the rapid method are deemed to be comparable to those obtained using the reference method, the second phase, *the collaborative study*, can begin.

Collaborative study. This phase involves a study of the *reproducibility* and *repeatability* of the rapid method. The expert laboratory organizes the collaborative study and presents the repeatability and reproducibility values obtained for the rapid method to the Technical Board. The Technical Board then advises AFNOR as to whether or not the rapid method should be validated.

Audit. Parallel to the carrying out of the collaborative study, AFNOR conducts an audit at manufacturer level so as to ensure that the latter has at his disposal a quality assurance system conforming to ISO 9003 as well as requirements concerning in-house control of the products.

The AFNOR validation is granted for four years. For each validated method, AFNOR returns to the manufacturer (or distributor or importer) a certificate of validation specific to each method and valid for a given category of products. This confirmation shall be given by the manufacturer to each method user.

Surveillance. AFNOR organizes the monitoring of conformity of the rapid methods to the validation criteria as soon as the latter are validated by conducting, 2 years after the validation, an audit on the same quality system of reference as that of the admission audit.

Renewal. At the end of 4 years, if the manufacturer wishes to renew the AFNOR validation, a bibliographic study and a collaborative study are conducted by an expert laboratory and a quality audit is carried out at the manufacturer's plant.

THE FRENCH SYSTEM WITHIN THE CONTEXT OF EUROPEAN AND INTERNATIONAL EXCHANGES

Reference methods

As France identically transposes the horizontal ISO standards, and since the CEN standards will be identic-

Table 1 Methods used for the official controls

<i>Standardized reference methods</i>		
Horizontal methods		
NF ISO 7218	1996	Microbiology of food and animal feeding stuffs – General rules for microbiological examinations
NF V 08-010	1996	Microbiology of food and animal feeding stuffs – General rules for preparation of dilutions for microbiological examination
NF ISO 4833	1991	Microbiology – General guidance for the enumeration of micro-organisms – Colony count technique at 30°C
NF ISO 6579	1993	Microbiology – General guidance on methods for the detection of <i>Salmonella</i>
NF V 08-014	1984	Microbiology of food products – General guidance for enumeration of <i>Staphylococcus aureus</i> – Colony count technique
NF ISO 4831	1991	Microbiology – General guidance for the enumeration of coliforms – Most probable number technique
NF ISO 4832	1991	Microbiology – General guidance for the enumeration of coliforms – Colony count technique
NF V08-019	1985	Microbiology of food products – General guidance for the enumeration of <i>Clostridium perfringens</i> – Colony count technique
NF ISO 7251	1994	Microbiology – General guidance for enumeration of presumptive <i>Escherichia coli</i> – Most probable number technique
NF ISO 7402	1993	Microbiology – General guidance for the enumeration of <i>Enterobacteriaceae</i> without resuscitation – MPN technique and colony count technique
NF ISO 7954	1988	Microbiology – General guidance for enumeration of yeasts and moulds – Colony count technique at 25°C
NF ISO 7932	1994	Microbiology – General guidance for the enumeration of <i>Bacillus cereus</i> – Colony count technique at 30°C
NF ISO 8914	1991	Microbiology – General guidance for the detection of <i>Vibrio parahaemolyticus</i>
NF ISO 8523	1992	Microbiology – General guidance for the detection of <i>Enterobacteriaceae</i> with pre-enrichment
NF ISO 10272	1996	Microbiology – General guidance for detection of thermotolerant <i>Campylobacter</i>
NF ISO 10273	1995	Microbiology – General guidance for the detection of presumptive pathogenic <i>Yersinia enterocolitica</i>
V 08-100	1987	Microbiology of food products – Plating out and enumeration of microorganisms by spiral plate technique
Sectorial methods (only 'specific' ones, not redundant with horizontal methods)		
NF V 04-015	1984	Dried milk and sweetened condensed milk – Microbiology
NF V 04-017	1991	Milk and milk products – Microbiological enumeration by colony count on Petri dishes – Method for verification of automatic counters
NF V 04-150	1985	Milk and milk products – Methods of sampling
NF V 04-501	1990	Meat and meat products – Microbiological analysis – Part 1: Test sample – Initial suspension and dilutions
NF V 04-502	1992	Meat and meat products – Microbiology analysis – Part 2: General guidance adaptation
NF V 04-503	1988	Meat and meat products – Enumeration of lactic bacteria
NF V 04-504	1988	Meat and meat products – Enumeration of <i>Pseudomonas</i>
NF V 04-505	1989	Meat and meat products – Enumeration analysis – Enumeration of <i>Brochothrix thermosphacta</i>
NF V 04-506	1992	Meat and meat products – Microbiological analysis of microorganisms – Colony count technique at 25°C
NF V 08-301	1983	Microbiology of food and feeding stuffs – Desiccated products – Microbiological analysis
NF V 08-501	1984	Food microbiology – Margarine – Preparation of a sample for microbiological analysis
Official methods		
– Official methods for sampling and bacteriological analysis of ice creams (Decree (Arrêté) of 30.08.1968 published in the Official Journal of the French Republic (J.O.) of 21.09.1968);		
– Official method for enumeration of specific flora of yogourt (Decree (Arrêté) of 25.11.1977, published in J.O. of 04.01.1978);		
– Mechanically separated meat and poultry – Sampling and analysis (DGAL circular n° 171C of 25.11.1977);		
– Analysis of pasteurized milk (Decree (Arrêté) of 03.01.1985, published in J.O. of 17.02.1985);		
– Detection of <i>Salmonella</i> in milk powders, lactoserum or buttermilk to be exported to some countries (DGAL circular n° 8098 of 25.09.1984);		
– Evaluation of microbiological quality of milks (Decree (Arrêté) of 02.05.1985, published in J.O. of 12.06.1985);		
– Analysis of butters (DGAL circular n° 8163 of 25.11.1986);		
– Bacteriological analysis for the control of shellfishes (DGAL circular n° 8003 of 28.04.1988);		
– Enumeration of <i>Listeria monocytogenes</i> in plant products (BOCCRF of 30.05.1992).		
Standardized routine methods		
V 08-050	1992	Microbiological analysis of foods products – Routine method for coliform counting – Count technique for colonies obtained at 30°C
V 08-051	1992	Microbiological analysis of food products – Routine method for microorganism counting – Count technique for colonies obtained at 30°C
V 08-052	1993	Microbiological analysis of food products – Routine method for detection of <i>Salmonella</i>
V 08-053	1993	Food microbiology – Enumeration of β -glucuronidase positive <i>Escherichia coli</i> by colony count technique at 44°C – Routine method
V 08-054	1993	Microbiological analysis of food products – Enumeration of <i>Enterobacteriaceae</i> by colony count technique – Routine method
V 08-055	1993	Food microbiology – Detection of <i>Listeria monocytogenes</i> – Routine method
V 08-056	1994	Food microbiology – Enumeration of <i>Clostridium perfringens</i> by colony count technique at 37°C – Routine method
V 08-057-1	1994	Food microbiology – Routine method for enumeration of coagulase positive <i>Staphylococcus</i> by colony count technique at 37°C – Part 1: Technique with confirmation of the colonies
V 08-057-2	1994	Food microbiology – Routine method for enumeration of coagulase positive <i>Staphylococcus</i> by colony count technique at 37°C – Part 2: Technique without colony confirmation
V 08-058	1995	Food and animal feeding stuffs microbiology – Enumeration of <i>Bacillus cereus</i> by colony count technique at 30°C – Routine method
V 08-059	1995	Microbiology of food and animal feeding stuffs – Enumeration of yeasts and moulds by colony count technique at 25°C – Routine method
V 08-060	1996	Microbiology of food and animal feeding stuffs – Enumeration of thermotolerant coliforms by colony count technique at 44°C – Routine method

Table 2 Validated 'rapid' methods

N° Certificate	Commercial reference	Type of method	Scope	Date of validation	End of validation
3M-01/1-09/89	Petrifilm total flora	Enumeration of total flora	All food products	29 September 1989 Renewed on 6 September 1993	6 September 1997
3M-01/2-09/89	Petrifilm coliforms	Enumeration of total coliforms and of faecal coliforms	All food products	29 September 1989 Renewed on 6 September 1993	6 September 1997
3M-01/3-07/92	Kit Tecra	Detection test of Salmonella	All food products	29 July 1993	29 July 1996
3M-01/4-09/92	Petrifilm E. coli	Enumeration of E. coli	All food products	24 September 1992	24 September 1996
TRA-02/3-11/92	Immunoenzymatic detection test of Listeria spp Transia Ref LI 0691/691F LI 0685/685F LI 0681/681F	Detection test of Listeria spp.	All food products	24 November 1992	24 November 1996
TRA-02/6-11/95	Detection test of Listeria spp-ISO/Fraser Enrichment Ref Li 0691, Li 0694, Li 0685, Li 0689	Detection test of Listeria spp.	All food products	21 November 1995	21 November 1999
TRA-02/4-11/93	Detection test of Salmonella spp Transia Ref SA 0168 - SA 0173 SA 0176 - SA 0178 and SA 0181	Detection test of Salmonella	All food products	3 November 1993	3 November 1997
UNI-03/1-05/91	Salmonella Rapid Test	Detection test of Salmonella	All food products	30 May 1991 Renewed on 8 September 1995	8 September 1999
UNI-03/2-04/95	Listeria Rapid Test	Detection test of Listeria spp.	All food products	11 April 1995	11 April 1999
RPD 09/1-11/93	Kit Locate	Detection of Salmonella	All food and feed products	3 November 1993	3 November 1997
SDP-07/1-07/93	"Rapid" E. coli medium	Medium for the enumeration of E. coli	All food products	6 July 1993	6 July 1997
SBI-08/1-09/93	Test 101 Flask, 16 wells and 96 wells plates	Detection test of antibiotics	Raw milk	6 September 1993	6 September 1997
AES-10/1-01/94	Salmonella 1-2 Test	Detection test of Salmonella	All food and feed products	13 January 1994	13 January 1998
AES-10/2-04/95	Listerscreen	Detection test of Listeria spp.	All food products	11 April 1995	11 April 1999
UCB-11/1-01/94	Penzym 100	Specific detection test of β -lactamins	Raw, sterilized and powder milk	13 January 1994	13 January 1998
BIO-12/1-04/94	Vidas Salmonella	Detection test of Salmonella	All food and feed products	6 April 1994	6 April 1998
BIO 12/3-03/96	Vidas Listeria monocytogenes	Detection test of Listeria monocytogenes	All food products	26 March 1996	26 March 2000
BIO 12/2-06/94	Vidas Listeria	Detection test of Listeria spp.	All food products	17 June 1994	17 June 1998
ORG 13/1-06/94	Salmonella-Tek	Detection test of Salmonella	All food and feed	17 June 1994	17 June 1998
DNA 14/1-06/94	Gene-Trak Systems Detection of Listeria genus	Detection test of Listeria spp.	All food products	17 June 1994	17 June 1998
DNA 14/2-02/95	DNA GT 602 Gene-Trak Systems Detection of Listeria monocytogenes	Detection test of Listeria monocytogenes	All food products	7 February 1995	7 February 1999
EUR 15/1-02/95	Deed Box Accuprobe Detection of Listeria monocytogenes GP 2920	Detection test of Listeria monocytogenes	Milk and products milk	7 February 1995	7 February 1999

al to the ISO ones, the French system of reference conforms with the European and international system of reference. This approach is reinforced by the European Commission which makes reference to the ISO standards while awaiting the publication of European ones, and by the fact that the GATT agreements refer to the Codex Alimentarius and in particular to the CCFH for the phytosanitary aspect of the commerce of foods (SPS); the CCFH makes reference to the methods drawn up by international organizations such as ISO.

Validation of the commercial methods

MicroVal, a European project within the framework of the Eurêka programme, was launched in 1993 and has the purpose of drawing up a certification process at European level for alternative methods in the field of

food microbiology. This project groups together seven European countries and the different partners involved (food industry, analysis laboratories, research and development centres, commercialized methods manufacturers, standards institutes). It draws up and submits for trial, via experimental validations, a general protocol for the organization of certification (management, certification stages etc.) and a protocol defining technical rules making it possible to conduct the necessary studies required for the validation of a method. On completion of the project, these two systems of reference will be submitted to the CEN in order to draw up European standards. On the basis of these two standards, certification will be launched in a form which still remains to be defined.

The French partners, and AFNOR in particular, thanks to the financial backing of DGAL, have become highly involved in this project and AFNOR will ensure

that its validation is able to be integrated into the European system. The recognition of the French system, at European level, will thus be reinforced.

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- [4] EC Decision of 22 June 1995 laying down the rules for the microbiological testing by sampling of fresh beef and veal and pigmeat intended for Finland and Sweden (published in OJ of 11.10.95)
- [5] French Standards V 03-100: 1991 "General methods of food analysis – Protocol for comparison of a rapid method with a reference method"
V 03-110: 1993 "Food analysis – Protocol for the evaluation of an alternative quantitative method against a reference method"
V 03-111: 1995 "Agricultural and food products analysis – Protocol for the intra-laboratory evaluation of an alternative method of qualitative analysis against a reference method"