

FOOD SAFETY THE IMPLICATIONS OF CHANGE FROM PRODUCERISM TO CONSUMERISM

Edited by

JAMES J. SHERIDAN, Ph.D.

Head, Food Safety Department
Teagasc, The National Food Centre
Dunsinea, Castleknock
Dublin 15, Ireland

MICHAEL O'KEEFFE, Ph.D.

Food Safety Department
Teagasc, The National Food Centre
Dunsinea, Castleknock
Dublin 15, Ireland

MARK ROGERS, Ph.D.

Department of Zoology
University College Dublin
Belfield, Dublin 4, Ireland

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TO CONSUMERISM

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MARK ROGERS, Ph.D.

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Belfield, Dublin 4, Ireland

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CONTRIBUTORS

- THOMAS ARNOLD**, Assistant Secretary, Department of Agriculture and Food, Agriculture House, Kildare Street, Dublin 2, Ireland.
- HENK BEKMAN**, IKB Programme Coordinator, Product Board for Livestock Meat and Eggs, Sir Winston Churchillaan 275, Postbus 5805, 2280 HV Rijswijk, The Netherlands.
- KEVIN BRENNAN**, Industrial Liaison Officer, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- ROBERT L. BUCHANAN**, Research Leader, U.S. Food and Drug Administration, 200 "C" Street, Washington, DC 20204 USA.
- JOHN D. COLLINS**, Professor, Faculty of Veterinary Medicine, University College Dublin, Ballsbridge, Dublin 4, Ireland.
- CATHAL A. COWAN**, Senior Research Officer, Food Marketing Research Group, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- PATRICK DALY**, Senior Research Officer, Quality Services Department, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- LIAM DOWNEY**, Director, Teagasc, 19 Sandymount Avenue, Ballsbridge, Dublin 4, Ireland.
- THOMAS DOYLE**, Head, Quality Services Department, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- CAROLINE GILL**, Chief Executive, Consumers' Association of Ireland, 45 Upper Mount Street, Dublin 2, Ireland.
- THOMAS R. GORMLEY**, Head, Consumer Foods Department, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- CECILY KELLEHER**, Professor, Department for Health Promotion, University College Galway, Galway, Ireland.
- ORLA KENNEDY**, Research Officer, Food Safety Department, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.
- DAVID MCCONNELL**, Professor, Department of Genetics, University of Dublin, Trinity College, Dublin 2, Ireland.
- ROBERT M. MCCRACKEN**, Deputy Chief Veterinary Officer, Department of Agriculture for Northern Ireland, Dundonald House, Upper Newtownards Road, Belfast BT4 3SB, Northern Ireland.
- JAMES D. MCNEIL**, Head, Centre for Veterinary Drug Residues, Canadian Food Inspection Agency, Saskatoon, Saskatchewan, Canada, 57N 2R3.
- ARTHUR J. MILLER**, Research Leader, U.S. Food and Drug Administration, 200 "C" Street, Washington, DC 20204 USA.
- ALISTAIR MORTON**, Group Director of Technical Affairs, Greencore Group plc., St Stephen's Green House, Earlsfort Terrace, Dublin 2, Ireland.
- MICHAEL O'KEEFFE**, Principal Research Officer, Department of Food Safety, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.

THOMAS P. OSCAR, Research Food Technologist, Agricultural Research Service, Microbial Food Safety Research Unit, United States Department of Agriculture, 1124 Princess Anne, Maryland 21853, USA.

WILLIAM PATERSON, Technical Manager, Tesco Ireland, Gresham House, Marine Road, Dun Laoghaire, Co. Dublin, Ireland.

T. HUGH PENNINGTON, Professor of Bacteriology, University of Aberdeen, Medical School Buildings, Foresthill, Aberdeen, Scotland AB 25 2 ZD.

PETER PRENDERGAST, Director, Consumer Policy and Consumer Health Protection, European Commission Directorate General XXIV, Food and Veterinary Office, Trident House, Rock Hill, Blackrock, Co. Dublin, Ireland.

MARK ROGERS, Lecturer, Department of Zoology, University College Dublin, Belfield, Dublin 4, Ireland.

JAMES J. SHERIDAN, Head, Food Safety Department, The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin 15, Ireland.

JAMES L. SMITH, Research Leader, Microbial Food Safety Research Unit, Eastern Regional Research Centre, Agricultural Research Service, United States Department of Agriculture, 600 East Mermaid Lane, Wyndmoor, Philadelphia, Pennsylvania, USA.

DAVID M. TAYLOR, Principal Research Scientist, Neuropathogenesis Unit, Institute for Animal Health, West Mains Road, Edinburgh EH9 3JF, Scotland.

PREFACE

In recent years there has been a dramatic change with respect to concerns regarding food safety. Of particular note is the legal change that consumers have a right to be sold safe food and that the primary producer is now part of the process which must guarantee the delivery of safe products. The rise in consumerism has been strengthened by the introduction of new legislation on the production of safe food, and in particular by the setting up of a new Directorate General — DG XXII to deal with all matters affecting consumer safety in the European Union. This recognition of the rights of consumers in relation to food safety comes against a background of increasing concerns regarding bovine spongiform encephalopathy (BSE), *E. coli* O157:H7 and genetically modified organisms (GMOs).

Consumers want to know what controls are in place to reduce the risk from pathogens and if these controls actually work. While Hazard Analysis of Critical Control Points (HACCP) has been available as a means of controlling the spread of contaminants, both microbial and chemical, it is important that it is used by industry in a manner that offers the consumer a means of protection. In this regard the implementation of food safety assurance at farm level is seen as a priority, and efforts to implement such systems are on-going and are seen as vital in combating the spread of diseases of animal origin to foods.

This book contains papers presented at a conference held in Dublin on 6th and 7th November 1997. The objective of the conference was to highlight the changes in consumer attitudes to food safety. This is against the background that food production issues and concerns were increasingly seen as having undue influence on the implementation of food controls and regulations.

The conference addressed some of the issues involved in consumer concerns on food safety and the processes that are in place or need to be put in place to deal with any problems arising.

The conference was organised by Dr. J.J. Sheridan and Dr. M. O'Keeffe of The National Food Centre, Dr. Mark Rogers of University College Dublin, and supported financially by the European Union and by Teagasc.

**JAMES J. SHERIDAN
MICHAEL O'KEEFFE
MARK ROGERS**

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CHAPTER 1

FOOD SAFETY ISSUES OF CONSUMER CONCERN

CAROLINE GILL

*Consumers' Association of Ireland
45, Upper Mount Street, Dublin 2*

ABSTRACT

For many years, the Consumers' Association of Ireland has highlighted problems connected with food safety, and has pressed for the removal of the responsibility for the supervision of food production from the Department of Agriculture and Food. Because the primary focus of the Department of Agriculture and Food was in advocating and asserting the interests of the producers, i.e., farmers and agri-business, the interests of consumers were frequently seen as, at best, a secondary consideration. Following the public concern created by the Creutzfeldt-Jakob Disease (CJD)/Bovine Spongiform Encephalopathy (BSE) issue, the Government announced the removal of food safety supervision from the Department of Agriculture and Food and the creation of a legislatively independent Food Safety Authority under the Minister of Health. Despite the serious consequences of delay in the establishment of this new organisation, progress on enacting the necessary legislation and bringing the new agency into being has been surprisingly slow. As these structural changes are being made, cases of BSE continue to occur in Ireland, further reducing local and international confidence in Irish beef. At home, consumers continue to question the safety of Irish beef, while abroad, loss of sales to Russia and Egypt present just two examples of the loss of international confidence in one of Ireland's major export products.

The Consumer Association of Ireland is calling on the Government to speed up all aspects of the establishment of the Food Safety Authority.

INTRODUCTION

This paper examines a number of consumer concerns in relation to food safety, particularly the concept that food production should be consumer-focused. Until very recently the Department of Agriculture and Food and its successive ministers, saw their primary role as advocating and asserting the interests of producers, farmers and agri-business, while the interests of the

consumer were seen to be of secondary importance. The needs of consumers should, however, be of central importance, as it is in everybody's interest, including producers, to have an excellent reputation in meeting consumer requirements.

Ireland needs to create an international centre of excellence in consumer food protection. It is important for the consumer, and the producer and the good name of Irish food, that these needs are met in order to maintain or enhance the wider reputation of Irish food.

FOOD SAFETY AUTHORITY OF IRELAND

Following public concern created by BSE, antibiotic residues in pork, nitrate residues in vegetables, and *Salmonella* in chicken, the Government announced the removal of responsibility for food safety inspection from the Department of Agriculture and Food and the formation of an independent Food Safety Authority under the Minister for Health. At present, however, progress in the development of the Food Safety Authority of Ireland (FSAI) is very slow. The new agency needs to be established as soon as possible, with the necessary statutory basis, adequate resources, and staffing. When these are in place, the FSAI will be able to undertake its role in the inspection of food and food premises, the development of systems for the surveillance of food related disease in humans, livestock and food and the establishment of related educational and advisory roles. A national scheme for the surveillance of foodborne disease must be established. At present it is not possible to effectively trace and investigate any outbreak of foodborne disease. Adequate surveillance should be able to identify contaminated products and ensure their removal from the market, as well as establishing the causative pathogens and products, and targeting appropriate intervention. To serve as an early warning system, this surveillance centre will require the effective combination of the skills of doctors, veterinarians, food scientists and information specialists.

CONSUMER CONCERNS

Information

Consumers are concerned that adequate information about food is not available, nor do they know if important facts about food are being withheld. For example, when it became clear that antibiotic residue levels in pork were very high, the Department of Agriculture and Food informed producers, but did not inform consumers. The Consumers' Association of Ireland (CAI), in their report, released this information to the Irish public. Although the public pay for analysis of samples from food service establishments, the results of such tests

are not readily available to consumers. Frequently, the information which does emerge into the public arena may be a year out of date. More current information should be comprehensively and rapidly available, by means of the Internet or the production of a weekly one page briefing of the type used by the police to circulate data on road traffic injuries and fatalities. Such a leaflet on food safety would be of great benefit to consumers and should not be difficult to provide if the relevant authorities were willing.

Food Labelling

Consumers are also concerned about inadequate labelling of food products. As choice increases and consumers become more aware of healthy eating they want more comprehensive and accurate information about the food on offer. For example, unpasteurised cheese does not have to be labelled as such, and there is no requirement for the manufacturer to indicate that unpasteurised cheese can pose an increased risk to some consumer groups including the elderly or expectant mothers. Consumers have wider concerns in relation to products being described as “natural”, “wholesome”, “light”, “low”, “traditional”, “pure”, etc., and are pressing for greater control of such nutritional and other claims, at national and European Union (EU) level.

National Beef Quality Assurance Scheme

Although there are a number of activities which could form elements of a future national beef quality assurance scheme, an acceptably comprehensive system is not yet in operation. Some of the current local schemes may be motivated more by sales than quality, and their multiplicity causes confusion and increased scepticism. Consumers need an independent, multidisciplinary, certifiable, auditable scheme, which is free of vested interests and which has a priority of advising and informing consumers. Consumers believe that a “two-tier” inspection system is operating in Ireland and that the export market is being better served and protected than the home market. Some abattoirs are still not under proper control, and ten local authorities are not taking responsibility for abattoirs in their regions.

Animal Diseases

There are also concerns in relation to a number of animal-related diseases. There are indications that cases of brucellosis are increasing, and very little progress is being made in the eradication of bovine tuberculosis (TB) (Anon. 1997). Although consumers are aware that it is important to eradicate TB from the national herd, they are dissatisfied that meat inspectors are spending large amounts of their time on this single priority. Perhaps meat inspectors should be

working on the wider range of problems related to organisms such as *E. coli*, *Campylobacter* and *Salmonella*, to ensure that the farmyard is kept out of the abattoir.

Food Handlers and the Food Chain

Food handlers do not have to undergo mandatory training in food hygiene. A CAI survey of food hygiene in fish processing found ignorance of the rules of basic hygiene, products not being hygienically processed, and storage temperatures that were frequently unsatisfactory. Education in, and application of, good food hygiene, is the responsibility of everybody at the four main stages of the food chain.

- (1) Farmers must send clean, healthy stock, free of pathogens and chemical residues, to the abattoir. If they don't, infected animals will enter the system and the final product may be contaminated.
- (2) Food plants should apply HACCP procedures using modern technology and scientific testing to maintain product quality and safety during processing.
- (3) Staff managing and handling food at the retail stage should be subject to mandatory training, to prevent frequent problems in relation to unsatisfactory hygiene, poor temperature control, etc.
- (4) Finally, consumers must recognise their very important role in food hygiene and the need for education in the proper storage, preparation and cooking of food.

RECOMMENDATIONS

When the interests of the consumer are properly protected, everybody wins. It is important to recognise this fact, and to ensure high levels of food safety, not just for the benefit of Irish consumers, but as a vital means of maintaining and enhancing the contribution of Irish food exports to overall economic activity.

The protection of the consumer interest is important not just for the Irish consumer but for the good name of Irish food, the export of which is such an important component of our economic activity.

IRISH AND EUROPEAN CONSUMER VIEWS ON FOOD SAFETY

CATHAL COWAN

*Teagasc, The National Food Centre
Dunsinea, Castleknock, Dublin 15, Ireland*

ABSTRACT

Results from two consumer surveys are presented. In the first, an EU FAIR (European Union Food, Agriculture and Industrial Research Programme), supported project, three-thousand consumers (500 in each of six countries, Germany, Italy, Britain, Spain, Sweden and Ireland) were surveyed, in March 1997, on their attitudes to the quality and safety of three meats, beef, pork and chicken. This paper deals with the safety aspects of the survey. Many consumers in all six countries said they were eating less beef and more chicken. Overall the Spanish and Irish appeared to be the most concerned about the safety of meat, the British were somewhat less concerned. While many were confident that the food in shops is safe there was a sizeable minority who believed the contrary. When looking for information on the safety of meat, butchers, whether independent or in supermarkets, are the group most trusted by consumers. In terms of consumer concerns, about 60 percent of beef consumers were very concerned about hormones, BSE (Bovine Spongiform Encephalopathy), antibiotics and bacteria. Pork consumers had similar levels of concern as beef consumers about bacteria, antibiotics and hormones. For chicken there was a higher level of concern about bacteria (Salmonella) (68% were very concerned) and similar levels of concern to pork and beef for the other issues. Generally, fat was the issue of least concern for all three meats. Freshness was considered to be relatively the most helpful of 7 factors used for assessing safety of meat. The country of origin and what the animal was fed were also considered to be relatively helpful. Factors considered to be relatively less helpful were price and the name of the producer. In the second study, over 1200 pre-leaving certificate Irish school children participated in autumn 1996 in a national survey assessing young people's attitudes to meat. Half of the respondents agreed with the view that eating beef means increasing the risk of getting CJD (Creutzfeldt-Jakob Disease). Those who agreed were more likely to be less frequent eaters of beef and to have reduced their meat consumption in the post BSE period. It was found also that females were more likely to eat less meat than males and to have

reduced beef consumption. The implications of some of the findings of these two surveys are discussed.

INTRODUCTION

The impact of consumer concerns on meat consumption is of particular interest to the food industry. In Ireland, for example, the official statistics for the last 10 years show that beef consumption has steadily declined (Table 1). On the other hand poultry consumption has increased. Beef consumption declined by 13% in 1996 compared with the 1995 level. The long-term decline originated with concern about fat and continued with reports about growth promoters. In more recent years BSE has become an additional risk factor for consumers. Other factors, not necessarily associated with safety may also be involved. These include animal welfare, taste and convenience. Recent reports claiming an association of animal products with cancers is another difficulty. This research aims to measure consumer perceptions on a number of food safety issues and to look at their impact on consumption.

TABLE 1.
CONSUMPTION OF BEEF, PIGMEAT AND POULTRY IN IRELAND (kgs/person)

| Year | Beef | Pigmeat* | Poultry | Total (all meats) |
|------|------|----------|---------|----------------------|
| 1986 | 22.3 | 34.5 | 18.4 | 81.9 |
| 1987 | 21.2 | 33.6 | 19.8 | 81.6 |
| 1988 | 19.3 | 35.4 | 20.7 | 82.1 |
| 1989 | 18.8 | 35.6 | 19.6 | 81.4 |
| 1990 | 17.9 | 35.2 | 21.6 | 82.9 |
| 1991 | 17.3 | 38.0 | 23.3 | 86.8 |
| 1992 | 17.1 | 37.2 | 23.5 | 85.9 |
| 1993 | 17.2 | 35.9 | 25.5 | 87.4 |
| 1994 | 15.7 | 36.6 | 27.8 | 88.2 |
| 1995 | 14.6 | 37.8 | 30.4 | 90.4 |
| 1996 | 12.7 | 37.8 | 31.0 | 89.2 |

*Pork and bacon.

Source: *Meat Supply Balances, various issues, Central Statistics Office, Cork, Ireland*

METHODOLOGY

Objectives

There are 3 objectives of the EU FAIR study. The first is to identify consumers' perceptions on the quality and safety of beef, pork and chicken. The second is to describe how quality policy is operated in each country. The third is to relate consumers' expectations on food quality and safety to quality management programmes with the aim of developing more consumer-oriented quality policies. This paper deals with the first objective.

The study with Irish adolescents (16-17 years of age) deals with a number of topics on attitudes to meat. There is evidence from the study that factors other than safety are impacting on meat consumption. These include animal welfare, taste, vegetarianism, convenience and healthiness. The main aim of this part of the paper is to examine the relationship between attitudes to CJD and beef consumption changes.

Materials and Methods

The FAIR survey was carried out in March 1997. Three-thousand consumers (500 in each of six countries, Germany, Italy, Britain, Spain, Sweden and Ireland) were interviewed on their perceptions of the quality and safety of three meats, beef, pork and chicken. The sample was drawn at random from respondents where at least one member of their household eats one or more of the three meats. The approach used is based on perceived quality as defined by Steenkamp (1989) i.e. "the way consumers form judgements about the quality of a product on the basis of incomplete information". In this case safety perceptions rather than quality perceptions were measured by way of 5 point scales. While there have been a number of studies in individual countries this study has the benefit of being undertaken in 6 countries. It may be compared with a US study (Vosen *et al.* 1992) on consumer attitudes to food safety which found that about 61% of all consumers were very concerned about the safety of all foods they consume. Some 42% believed beef was very safe versus 18% who expressed a higher level of concern about red meat safety than any other food. The comparable figures for higher level of concern for fish & seafood and poultry safety were 33% and 17%, respectively, indicating beef was more acceptable than these products in safety terms. Americans, in 1992, were also more concerned about bacteria and fat in beef than hormones and antibiotics.

Results are presented for consumer attitudes regarding concerns about meat, the helpfulness of a number of factors for assessing the safety of meat, attitudes on food safety and who or what consumers most trust in looking for information on the safety of meat. Further analysis was used to establish whether the differences in ranking of concerns were statistically significant. The Wilcoxon

signed rank test was undertaken for each pair of concerns. Concerns not statistically different are grouped together in the tables of results. Similarly helpfulness factors that are not statistically different are grouped together.

In the second study, as part of an EU Structural Funds project, over 1200 pre-leaving certificate Irish students participated in autumn 1996 in a national survey assessing young people's attitudes to meat. Results are presented for two safety-related statements, the respondents beliefs about CJD and their attitude to food in general. Finally, their opinion on how much confidence they have in what various organisations and companies have to say about meat-related issues was ascertained.

EU CONSUMER PERCEPTIONS ON MEAT SAFETY

Ranking of Concerns

Consumers were asked how concerned or unconcerned they were personally about the following issues when buying fresh beef, pork and chicken: growth promoters (hormones), antibiotics, fat or cholesterol, *Salmonella* or other bacteria, and BSE (beef only). Five point measurement scales ("very concerned" to "not at all concerned") were used. Table 2 shows the proportion of consumers for the six countries combined who were "very concerned". The proportion of consumers who were "very concerned" varied between 56 and 62% for most issues, except for *Salmonella* in chicken at 68% and for fat/cholesterol at 34-39%. Data on the range (lowest to highest) show that the level of concern varies considerably between countries for each issue.

TABLE 2.
CONSUMER CONCERNS - SIX COUNTRY AVERAGES

| Concern | Proportion of consumers (%) "very concerned" | | | | | |
|-----------------------------|--|---------|---------|---------|---------|---------|
| | Beef | | Pork | | Chicken | |
| | average | range | average | range | average | range |
| hormones | 60 | (52-76) | 57 | (44-67) | 56 | (47-67) |
| antibiotics | 57 | (45-72) | 57 | (42-68) | 55 | (43-71) |
| BSE | 62 | (51-72) | - | | - | |
| bacteria/ <i>Salmonella</i> | 58 | (46-73) | 60 | (46-71) | 68 | (48-81) |
| fat/cholesterol | 37 | (20-47) | 39 | (24-57) | 34 | (21-46) |

For presentation of the detailed results by country the average scores for each concern were calculated and the concerns were then ranked within each country.

Beef. The within-country groups, taking the statistical analysis into account, are shown in Table 3. Hormones were in the group of issues of most concern in all countries. Antibiotics were of equal concern in 5 countries, being of slightly lower concern to Spanish consumers. BSE, hormones, antibiotics and bacteria/*Salmonella* were perceived to be of equal concern in the U.K. and Sweden. BSE was regarded with the same high level of concern as hormones and antibiotics in Germany and Italy, while bacteria/*Salmonella* were of the same concern in Ireland. The latter issue was of somewhat lower concern to German, Spanish and Italian consumers. Fat or cholesterol was of least concern in all six countries.

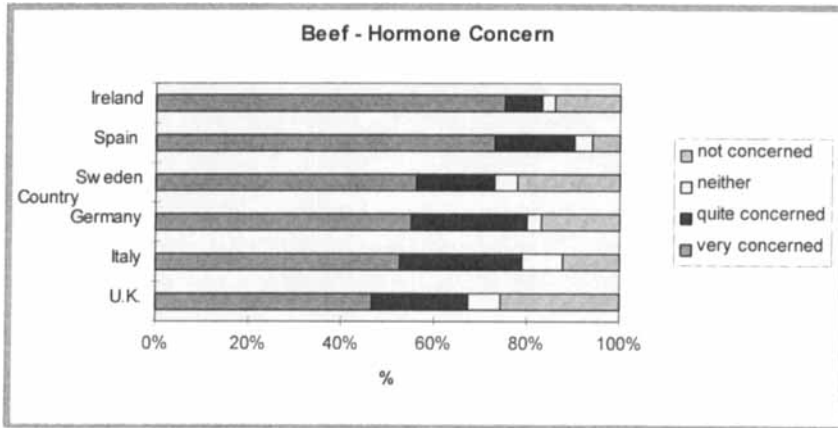
TABLE 3.
GROUPING OF BEEF CONCERNS WITHIN EACH COUNTRY
(A = highest level of concern, D = lowest)

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | A | A | A | A | A | A |
| antibiotics | A | A | A | A | B | A |
| fat or cholesterol | C | B | B | C | D | B |
| bacteria/ <i>Salmonella</i> | A | A | A | B | B | B |
| BSE | B | A | A | A | C | A |

Note: In this and similar subsequent tables concerns not statistically different are grouped together.

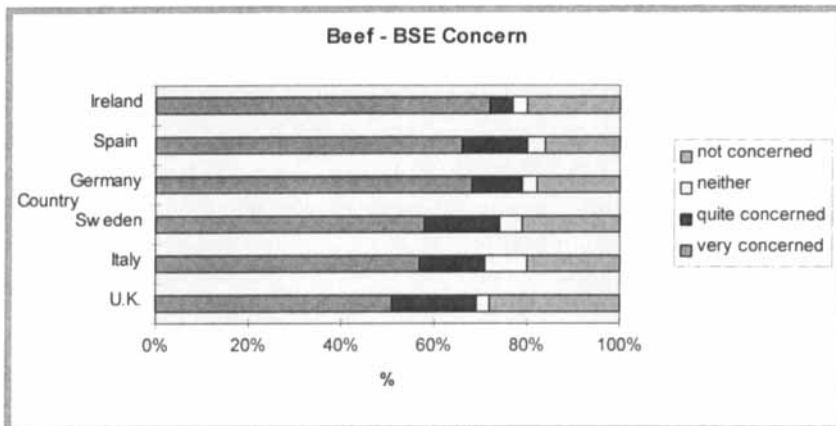
The detailed results by country for concern about hormones in beef and BSE are shown in Fig. 1 and 2. They illustrate considerable levels of concern in all countries. They also illustrate the varying levels of concern between the countries. In the case of hormones in beef, more consumers in Spain and Ireland were concerned than in the other countries; those "very concerned" varied from 47% in the UK to 73% and 76% in Spain and Ireland, respectively. In the case of BSE, although Irish consumers were less concerned about BSE than they were about antibiotics and hormones, they indicated greater concern about BSE than consumers in other countries. Levels of "very concerned" varied from 51% for British consumers to 72% for Irish consumers.

Pork. The within-country groups for pork, based on average scores and statistical analysis, are shown in Table 4. In Ireland, Sweden and Spain, *Salmonella* or other bacteria, antibiotics and hormones, had equally high concern scores. For the UK bacteria/*Salmonella* were of more concern than hormones and antibiotics while the reverse applied for Germany. Fat or cholesterol causes the least concern in five of the six countries. The exception was Italy where differences in the degree of concern were not significant for all the issues studied.



*Chi square⁽¹⁾ = 186***, n = 2449*

FIG. 1. CONCERN ABOUT HORMONES WHEN BUYING BEEF



*Chi square = 104.9***, n = 2449*

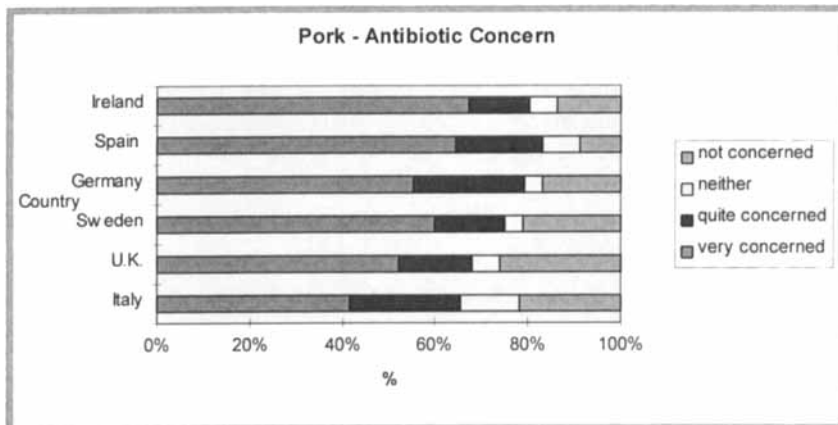
FIG. 2. CONCERN ABOUT BSE WHEN BUYING BEEF

¹ *Chi square tests were used to test for significance for this and all similar charts or tables. For presentation purposes the low proportion of "don't knows" are included with those who were "neither concerned nor unconcerned". Those "not very concerned" and "not at all concerned" are also combined in "not concerned". There were significant differences in scoring between consumers in the six countries for all results presented.*

TABLE 4.
GROUPING OF PORK CONCERNS WITHIN EACH COUNTRY
(A = highest, C = lowest)

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | A | B | A | A | A | A |
| antibiotics | A | B | A | A | A | A |
| fat or cholesterol | B | C | B | C | B | A |
| bacteria/ <i>Salmonella</i> | A | A | A | B | A | A |

Detailed results by country for concern about antibiotics in pork are shown in Fig. 3. They illustrate considerable levels of concern in all countries, but, also, the varying levels of concern between the countries. Italian and UK consumers were the least concerned with 42 and 52% being very concerned, respectively. Irish consumers were the most concerned with 68% being very concerned.



Chi square = 121.4 ***, n = 2374

FIG. 3. CONCERN ABOUT ANTIBIOTICS WHEN BUYING PORK

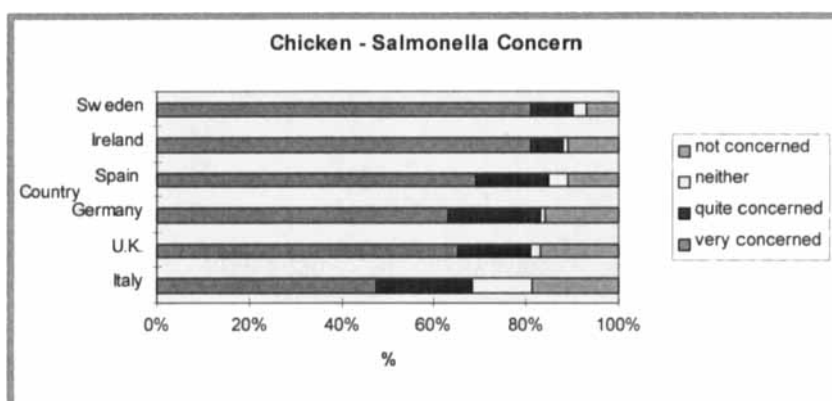
Chicken. The within-country groups for chicken are shown in Table 5. For chicken a similar pattern emerged in all countries. Bacteria/*Salmonella* was in the top group of concerns in all six countries. In Spain hormones, and in Italy both hormones and antibiotics, were of equal concern as bacteria/*Salmonella*. The main difference between countries was between hormones and antibiotics

as their second greatest concern with antibiotics generally of more concern in Ireland and Sweden, of equal concern in the UK and Germany and hormones of more concern in Spain. Respondents in all countries agreed that fat or cholesterol in chicken was of least concern.

TABLE 5.
GROUPING OF CHICKEN CONCERNS WITHIN EACH COUNTRY
(A = highest, D = lowest)

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | C | B | C | B | A | A |
| antibiotics | B | B | B | B | B | A |
| fat or cholesterol | D | C | D | C | C | B |
| bacteria/ <i>Salmonella</i> | A | A | A | A | A | A |

The results for concern about bacteria/*Salmonella* in chicken are shown in detail in Fig. 4. Some of the highest levels of concern were shown about bacteria/*Salmonella*; however, the level of concern was not consistent across countries. In both Ireland and Sweden 81% of consumers said that they were “very concerned” while, at the other end of the scale, only 48% of Italian consumers were “very concerned” on this issue.



Chi square = 257 ***, *n* = 2832

FIG. 4. CONCERN ABOUT BACTERIA/SALMONELLA WHEN BUYING CHICKEN

Ranking Concerns Between Countries. For ease of presentation, the concerns were also ranked between countries. Table 6 shows the results for concerns relating to beef, pork and chicken. These rankings illustrate that, overall: (1) Spanish and Irish consumers are most concerned about the safety of meat, (2) British consumers are least concerned, and (3) Swedish, German and Italian consumers are intermediate in their concerns. However, consumers in Sweden, Germany and Italy are more concerned than consumers in most other countries about particular issues. The Swedes are more concerned about *Salmonella* in chicken, the Germans are more concerned (apart from the Irish) about BSE and the Italians are more concerned (apart from the Spanish) about fat in all three meats.

TABLE 6.
RANKING OF CONCERNS ABOUT MEATS ACROSS THE SIX COUNTRIES
(1 = highest, 6 = lowest)

(a) Beef

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | 2 | 6 | 5 | 4 | 1 | 3 |
| antibiotics | 2 | 6 | 4 | 3 | 1 | 5 |
| fat or cholesterol | 3 | 4 | 5 | 6 | 1 | 2 |
| bacteria/ <i>Salmonella</i> | 2 | 5 | 3 | 6 | 1 | 4 |
| BSE | 1 | 6 | 4 | 2 | 3 | 5 |

(b) Pork

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | 2 | 6 | 4 | 3 | 1 | 5 |
| antibiotics | 2 | 5 | 4 | 3 | 1 | 6 |
| fat or cholesterol | 2 | 4 | 5 | 6 | 1 | 2 |
| bacteria/ <i>Salmonella</i> | 2 | 4 | 3 | 5 | 1 | 6 |

(c) Chicken

| Concern | Ireland | United Kingdom | Sweden | Germany | Spain | Italy |
|-----------------------------|---------|----------------|--------|---------|-------|-------|
| hormones | 2 | 6 | 5 | 4 | 1 | 3 |
| antibiotics | 1 | 6 | 3 | 4 | 2 | 5 |
| fat or cholesterol | 3 | 4 | 6 | 5 | 1 | 2 |
| bacteria/ <i>Salmonella</i> | 2 | 4 | 1 | 4 | 3 | 6 |