ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD

ACMSF review of the 1992 report on vacuum packaging and associated processes

Introduction

1. In 1992, the ACMSF published a report on “Vacuum Packing and Associated Processes”, which forms the evidence base for subsequent FSA guidance on vacuum packaged (VP) and modified atmosphere packaged (MAP) chilled foods. The FSA guidance sets the maximum shelf life of these products to ten days, unless there are other controlling factors in place.

2. The FSA guidance was revised in 2017 to improve clarity, with the evidence base remaining the same. In January 2020, an ACMSF subgroup on non-proteolytic *Clostridium botulinum* and VP/MAP foods produced a report reviewing evidence provided by the British Meat Processors’ Association and Meat Livestock Australia on the shelf life of beef, pork and lamb with respect to *C. botulinum* risk. The ACMSF subgroup concluded that there was evidence that the shelf life of VP/MAP fresh beef, pork and lamb could be extended to thirteen days, and that the ACMSF should consider reviewing the 1992 report. The subgroup had discussed elements of the 1992 ACMSF report throughout the lifetime of the subgroup, although it was outside of the scope of the subgroup to review the document in full.

3. FSA Policy have recently established a working group with industry representation to discuss updating the FSA guidance on VP/MAP foods, and released a joint statement. This working group is conducting an international review of legislation and guidance related to VP/MAP chilled fresh beef, lamb and pork, to determine whether the UK is unique in having specific guidance for such VP/MAP fresh meat. The FSA has also launched a consultation, requesting comments on four points: (A) the recommended 10-day shelf life of VP and MAP chilled beef, lamb and pork; (B) amendments to the guidance suggested by the ACMSF subgroup in January 2020; (C) removing references to the European Union in the guidance; (D) improving the accessibility of the guidance.

4. Given the time that has passed since the publication of the 1992 ACMSF report, the additional scientific evidence available and the introduction of new technology for VP and MAP foods, it is important to review the evidence on VP

and associated processes. The FSA is inviting the ACMSF to discuss risk assessment issues that are relevant for inclusion in a review of VP and MAP foods. The setting up of a new ACMSF subgroup requires a statement from FSA Policy, which sets out the issues of interest to them, and this is currently in preparation.

Summary of the 1992 report

5. In 1991 a working group was set up to prepare a report on the potential hazards of vacuum packing and other associated processes. The group reviewed psychrotrophic *C. botulinum* as well as other pathogens of concern (e.g. *Listeria monocytogenes, Bacillus cereus*).

6. Chapter 1 – Epidemiological information.
   This chapter considered botulism outbreaks. The group found that European countries with an incidence of botulism higher that the UK frequently had home preservation implicated. The group recommended that home canning or bottling of low-acid vegetables should not be encouraged. Additionally, the group recommended that food manufacturers should critically assess all new food processing technology.

7. Chapter 2 – Psychrotrophic *Clostridium botulinum* microbiology and control in foods.
   The group reviewed the evidence for the conditions that would prevent the growth of psychrotrophic *C. botulinum*. The groups recommended that chill temperatures should be maintained in addition to controlling factors that can be used singly or in combination in chilled foods with a shelf life of over 10 days. They recommended that controlling factors are a heat treatment of 90°C for 10 minutes or equivalent, a pH <5, a minimum salt level of 3.5% or an a_w of 0.97. This chapter also reviewed other pathogens of concern, such as *B. cereus*, *Campylobacter jejuni*, proteolytic *C. botulinum*, *Clostridium perfringens*, *Escherichia coli*, *Listeria monocytogenes*, *Salmonella*, *Staphylococcus aureus*, *Vibrio parahaemolyticus*, *Yersinia enterocolitica* and Hepatitis A virus.

8. Chapter 3 – Controlling factors of psychotropic *C. botulinum* in chilled foods.
   The group assigned foods into categories according to the potential for growth of psychrotrophic *C. botulinum* and assigned the categories a priority for attention. While the group stated that the categories should not be applied outside of the scope of the report, they would be useful in preparing a code of practice to help advise manufacturers and enforcement officers of the foods most likely to present a risk of growth of psychrotrophic *C. botulinum.*

9. Chapter 4 – Packaging and manufacturing processes
   This chapter describes the various packaging and manufacturing processes

and the issues arising from these. The group concluded that the risk of *C. botulinum* overcoming preservation techniques increases with higher numbers of the organism, therefore making it important to monitor and control all stages of production. The group felt that the code of practice should promote HACCP systems as there was concern about the lack of knowledge about the hazard of *C. botulinum* among small food processors and consumers. The group identified a need to inform consumers of the correct handling practices and for clear labelling to show that the products should be chilled and not consumed after the use by date.

10. Chapter 5 – Legislation and codes of practice
    The group considered that registration of food premises is a significant step towards identifying businesses using processes of concern. The production of a code of practice would assist enforcement officers in understanding which processes and food groups pose the greatest risk. The group also said that it was essential that any code of practice produced should be widely adopted by industry.

11. Chapter 6 – Current research in the UK relating to factors affecting the survival and growth of psychrotrophic *Clostridium botulinum* in food.
    The group summarised ongoing research undertaken within the UK on the survival and growth of psychrotrophic *C. botulinum*. The group recognised that there was considerable ongoing work on psychrotrophic *C. botulinum* and recommended that this should be kept under review.

Questions for the committee

12. The ACMSF's remit is now focused on risk assessment whereas at the time of the 1992 report the remit was wider. In revisiting the report, the committee should avoid proposing work on any areas which are concerned with risk management. With these considerations in mind Members are invited to:

    a. Consider what topics are likely to be of importance in a review of vacuum packaged foods and other associated processes, including the processes, types of food and the microorganisms of concern.
    b. Identify the priority issues for a future working group to address.
    c. Comment on areas that should not be covered in this review.
    d. Provide some initial suggestion as to how the work might be addressed from a risk assessment perspective and where additional evidence might be needed to support this work.

Secretariat
October 2020