**ACM/1120**

**ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD**

**DISCUSSION PAPER**

# RAW, RARE AND LOW TEMPERATURE COOKED FOODS

1. The ACMSF considered horizon scanning at its January 2011 meeting, of the four areas that were identified based on cross-cutting themes, the risks presented by changes in food processing and production in the hospitality sector was selected for further consideration.

2. The ACMSF catering members were asked to gather information to inform discussion on this topic. The findings of this information gathering exercise were presented to the Committee in January 2012. Following discussion by the Committee two issues were identified for further consideration: Extrapolation of data on pathogen survival at low cooking temperatures (such as those used in water cooking) and the evidence on microbiological safety of raw/rare foods. The Committee agreed to establish an ad hoc group to examine these topics in detail.

3. The issue was referred by the Committee to the *Ad Hoc* Group on raw, rare and low temperature cooked foods who met in July 2012 to begin their considerations of these foods. The Group met a total of eight times over a period of 15 months.

4. The *Ad Hoc* Group investigated the *sous vide* method of cooking, where lower temperatures are often used, and considered all the published data on the effect of temperature on the growth and inactivation of food pathogens to inform their risk assessment. Foods served raw and rare were then considered. The main focus was on burgers that are served rare and the risks associated with the various methods of preparation. The group has put forward a number of recommendations for consideration:

    - In low temperature cooking, both during heating up and cooling down, it is possible that foods will be within a temperature range that could allow the growth of foodborne organisms. Consideration should be given to science-based guidance on time limits that foods can safely remain within a temperature range that could allow growth of foodborne microorganisms.

    - Throughout the FSA website, various papers, information and recommendations on alternative cooking times to the 70ºC for 2 min process, utilise calculations based on a z value of 7.5$^{o}$C. It would appear appropriate to continue to use these figures in the future for processes primarily designed to eliminate vegetative pathogens such as *Salmonella* and *Listeria monocytogenes*. However, FSA should consider what they should recommend for processes which are more concerned with the elimination of other organisms.

- More research is required to reliably establish z values (for temperatures) between 55 and 60$^{o}$C, to enable the derivation and application of safe temperature/time treatments, and reduce potential risks to consumers. Such research should also address the above-noted increased variations in killing bacteria, associated with strain to strain variation, food type (including issues such as fat levels) and environmental factors.

- Further research should be carried out to gain an effective understanding of the growth potential of *C. perfringens* between 52$^{o}$C and 55$^{o}$C.

- FSA should consider the inherent conflict between current legislation on hot holding of foods and low temperature cooking, and may wish to consider additional/alternative guidance/legislation to adequately reduce the above noted dangers associated with holding (cooked or uncooked) foods at temperatures which facilitate rapid growth of persisting or contaminating pathogens.

- It is possible that low temperature cooking at levels that are equivalent to a 70$^{o}$C/2min process, may produce meat products that still appear pink/red. This would conflict with current advice to consumers on cooking until no pink/red is observable. FSA should consider the need to modify its advice to consumers.

- The knowledge of the overall risks from whole cuts served rare would be informed by more data on the internal contamination of such products and pre-cook practices on introducing internal contamination into these products.

5. Dr Roy Betts (Chair) will introduce the draft paper produced by the Group.

6. Members are invited to:

    i. Comment on the content and scope of the paper.
    ii. Comment on the recommendations - are they appropriate and which are the highest priorities?
    iii. Comment on the risks to consumers associated with use of low temperature cooking and foods of animal origin served raw or rare.
    iv. Agree on the data gaps/research needs identified and the significance of these.
    v. Consider if there is any further work the Committee may wish to do on this topic or areas they may wish to explore in more detail e.g. fish/seafood, viruses, protozoa.

**Secretariat**
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