

E. coli with a side of fries? The real safety risk of the increasing trend for pink burgers in the U.K.

PINNINGTON, Saskia, HEURLIER, Karin, MORRIS, Cecile http://orcid.org/0000-0001-6821-1232 and MILLMAN, Caroline http://orcid.org/0000-0003-4935-0477

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E. COLI WITH A SIDE OF FRIES? THE REAL SAFETY RISK OF THE INCREASING TREND FOR PINK BURGERS IN THE UK



Saskia Pinnington, Karin Heurlier, Cécile Morris and Caroline Millman

Stoddart Building, Sheffield Hallam University, Howard St, Sheffield S1 1WB

INTRODUCTION

When cows are slaughtered, there is a potential risk for the surface of the meat to get contaminated with microorganisms from the animal guts, such as Esherichia coli. Cattle can be a healthy carrier of E.coli from the VTEC serotype (such as the infamous E. coli O157), with 19 to 39% farm-level prevalence in UK (Chase-Topping et al., 2008). Stringent CCPs are put in place to try to reduce the initial loading and further contamination of the meat before consumption; still, in 1997, E. coli O157 was found in 1.1% of 1120 beef burgers sampled in the UK (Chapman et al., 2000). Unlike steaks, which present surface contamination only, burgers can present contamination to their core, due to the redistribution of that surface area during the mincing process. As a result, partial cooking does not reduce microbiological loading in burgers and implies an increased risk to consumers of being exposed to E. coli O157. Despite published guidelines from the UK Food Standard Agency (FSA) on the preparation and serving of rare burgers, there is a growing trend of eating "pink" burgers in the UK (Jones et al., 2016).

enemy of the nanny state. He wants to review puritanical 'sin' taxes, such as the sugar tax. What about health regulations stop many restaurants serving rare gers? 'Can you not order rare aburgers now?' he asks. 'Why the hell

Figure 1. Even high profile politicians contribute to misleading the public bout the safety of rare burgers.

Figure 2. An online survey (n = 628) was conducted to assess the preferences and food safety perceptions of consumers when it comes to eating burgers cooked at different levels,

using colour as a measure.
Information on the cooking time or temperature of the burgers was not provided, instead the pictures were attributed randomised numbers for choice purposes. To prepare the visual aids, a range of core temperatures was attributed to each targeted level of doneness, which could be reached by cooking the burgers for the indicated time.



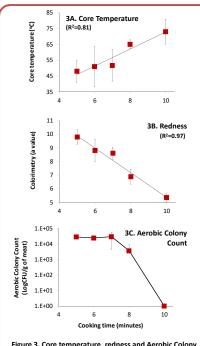
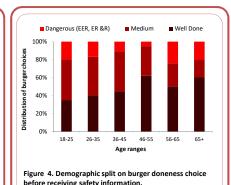


Figure 3. Core temperature, redness and Aerobic Colony Count (ACC) compared to cooking time.

A. The core temperature of burgers was measured with a digital probe At the cube temperature of unigers was measured with a uigrap proper after the burgers were cooked for a determined time an blast-chilled. B. The colour of the cores of burgers was measured with a Minotla colorimeter after the burgers were cooked for a determined time an blast-chilled. The a values from the L,a,b measurements were used to estimate the redness of the burgers.

C. ACC was determined for burgers blast-chilled after reaching a specific level of doneness. An acceptable level of ACC was only achieved in the burger cooked for 10 minutes.



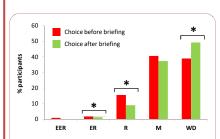


Figure 5. The choice of level of doneness for burgers is influenced by the briefing of the participants on the risks and safety measures associated with burgers.

indicates significantly different (p<0.05) count of choices before and after briefing, as determined with a McNemar test

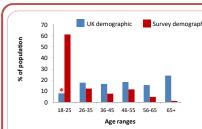


Figure 6. Survey population

The survey attracted over 700 participants, but only 628 were included

after data cleaning.
73% female versus 27% male.
Age ranges used are similar to those used in population pyramids (25-34; 35-44; 45-54; 55-64; 65+; PopulationPyramids.net); the 18-25 group from the survey is compared to a 20-24 UK group (*) meaning that people aged 18 and 19 are not represented in the UK demographic bar. Survey participants with experience in the food sector equated to 59% of the survey population.

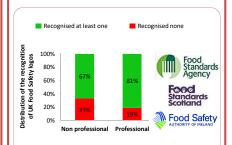


Figure 7. Food Safety Logo recognition of participants with food industry experience and those without.

CONCLUSION

- ☐ Core temperatures, redness and total ACC were shown to correlate to cooking time, with the well-done sample achieving a core temperature of >70°C.
- ☐ The trend towards pink burgers was confirmed, with only 34% of the survey participants choosing the 'safeto-eat' or well-done burgers.
- ☐ The survey identified a gap in knowledge in food safety from the participants with no food safety qualifications, with 33% of them having never heard of the UK Food Standards Agency.
- Providing the FSA guideline about cooking and eating safe burgers had a significant (p<0.05) impact on the participants choices, with a 12.3% shift in their preferences towards burgers cooked to a greater degree.

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