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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

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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 *Escherichia 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).

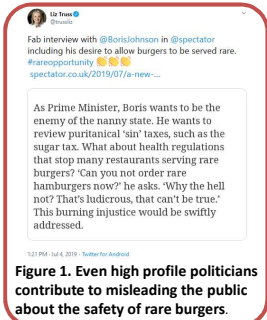
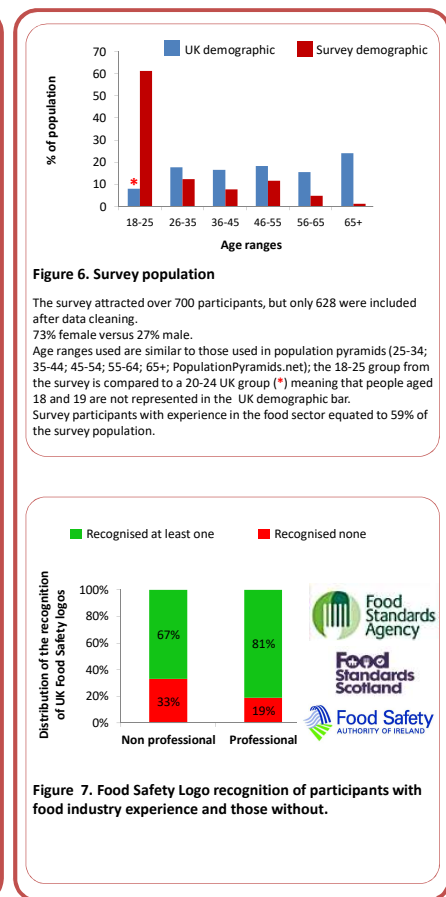
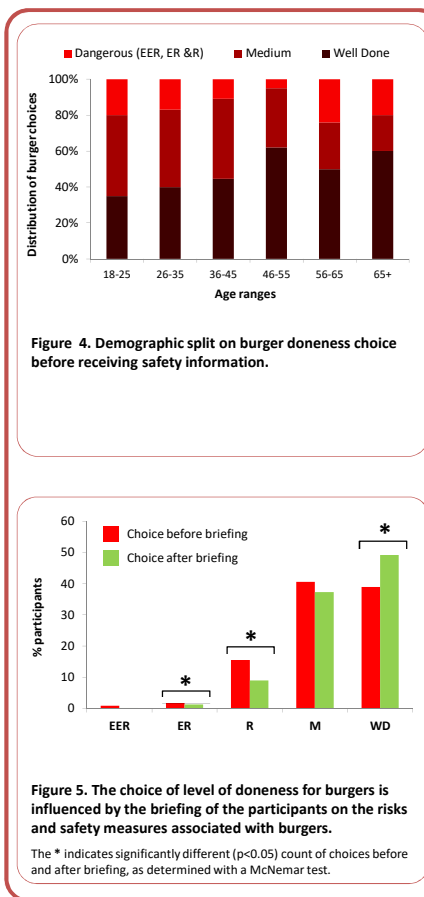
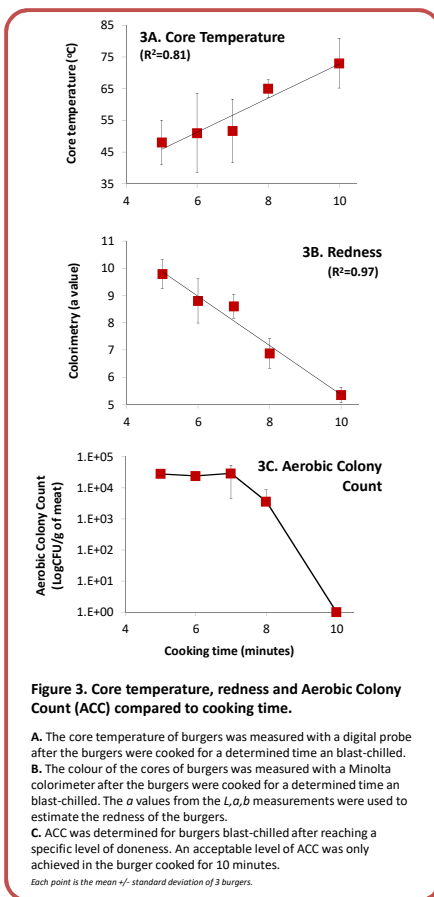


Figure 2. An online survey (n = 628) was conducted to assess the preferences and food safety perceptions of consumers when it comes to eating burgers cooked at different levels, using colour as a measure. Information on the cooking time or temperature of the burgers was not provided, instead the pictures 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.



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 'safe-to-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.

REFERENCES

Chase-Topping et al., 2008. Super-shedding and the link between human infection and livestock carriage of *Escherichia coli* O157. *Nat Rev Microbiol* 6:904-912

Chapman et al., 2000. A one year study of *Escherichia coli* O157 in raw beef and lamb products. *Epidemiol Infect* 124:207-213

Jones et al., 2016. Restaurant Cooking Trends and Increased Risk for *Campylobacter* Infection. *Emerg Infect Dis* 22:1208-1215

FSA, 2017. Food safety advice when preparing burgers at home and when eating burgers in restaurants. <https://www.food.gov.uk/safety-hygiene/burgers>