

DETERMINING OPTIMAL CLEANING FREQUENCY AND METHODS FOR WOODEN AND PLASTIC CHOPPING BOARDS

Man Ling Chau^{1,2}, Joanne Su Lin Kang¹, Kyaw Thu Aung^{1,2,3,5}, Keng Wai Mak^{1,4}, Sri Harminda Pahlm Hartantyo^{1,2}, Hooi Ming Yap¹ and Lee Ching Ng^{1,5}

¹Environmental Health Institute, National Environment Agency; ²National Centre for Food Science, Singapore Food Agency; ³School of Chemical and Biomedical Engineering, Nanyang, Technological University; ⁴School of Chemical and Life Sciences, Nanyang Polytechnic; ⁵School of Biological Sciences, Nanyang Technological University, Singapore

Abstract. Contaminated chopping boards can lead to foodborne infections. In this study, we aimed to determine the optimal frequency and methods for cleaning chopping boards when the boards are for prolonged use. This study was conducted in 2 parts. The first part observed the time required for *Escherichia coli* to multiply on wooden and plastic chopping board specimens when spiked with *E. coli* at a concentration of 5 log CFU/25cm² and then incubated at 25°C in 85% relative humidity for 0, 4, 8 and 24 hours. The second part of the study consisted of determining the most effective method for cleaning chopping board specimens. We spiked the studied chopping board specimens with *E. coli* at a concentration of 8 log CFU/25cm², cleaned them using 3 dry-cleaning methods for the wooden chopping board specimens and 3 wet-cleaning methods for the plastic chopping board specimens and then culturing the chopping board specimens to determine the remaining bacterial concentrations. The results from the first part of our study showed the *E. coli* spiked studied chopping board surfaces remained stable with a bacterial concentration of about 5 log CFU/25cm² for the first 4 hours and then the bacterial concentration increased to ≥ 8 log CFU/ml by 24 hours incubation. The results from the second part of the study showed no significant difference among the studied methods for cleaning wooden chopping board surfaces but the non-significantly better method was to wipe the surface, scrape the surface and then wipe the surface again, resulting in an average bacterial reduction of 1.84 log CFU/25cm². The best method for significantly ($p < 0.05$) reducing bacteria on studied plastic chopping board surface was to scrub the surface with detergent, rinse it under running tap water, rinse it with hot water and then hang it dry, resulting in an average bacterial reduction of 5.64 log CFU/25cm². As a good hygiene practice, it is advisable to clean chopping boards frequently every four hours especially when the boards are for prolonged use. Wooden chopping boards can be cleaned by any of the studied methods but are probably better cleaned by wiping the surface, scraping the surface and then wiping the surface again. Plastic chopping boards are best cleaned by scrubbing the surface with detergent, rinsing it under running tap water, followed by rinsing with hot water and then hanging it to dry.

Keywords: wooden chopping boards, plastic chopping boards, bacterial log reduction, cleaning

Correspondence: Lee Ching Ng, Environmental Health Institute, 11 Biopolis Way #06-05/08 Helios Block, Singapore 138667.

Tel.: +65 6571 0476; Fax: +65 6777 2275; E-mail: NG_Lee_Ching@nea.gov.sg