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Presence of Faecal Coliforms and Selected Heavy Metals in Ice Cubes from Food Outlets in Taman Universiti, Johor Bahru, Malaysia

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Consumption of iced beverages is common in Malaysia although specific research focusing on its safety parameters such as presence of faecal coliforms and heavy metal elements remains scarce. A study conducted in Kelantan indicated that faecal coliforms were detected in the majority of the ice cube samples analyzed, largely attributable to improper handling. Hence, it was found pertinent to conduct similar study in other parts of the country such as Johor Bahru for investigating if the similar pattern prevailed. Therefore, this present cross-sectional study which randomly sampled ice cubes from 30 permanent food outlets in Taman Universiti, Johor Bahru for detecting contamination by faecal coliforms and selected heavy metal elements (lead, copper, manganese and zinc) acquires significance. Faecal coliforms were detected in 11 (36.67%) of the samples, ranging between 1 CFU/100 mL to > 50 CFU/100 mL; two of the samples were grossly polluted (>50 CFU/100 mL). Interestingly, while positive detection of lead was observed in 29 of the 30 ice cube samples (mean: 0.511 ± 0.105 ppm; range: 0.489-0.674 ppm), copper, manganese and zinc were not detected. In addition, analysis on commercially bottled mineral water as well as in tap water samples did not detect such contaminations. Therefore, it appears that (1) contamination of faecal coliforms in ice cubes in food outlets in Malaysia may not be sporadic in pattern but rather prevalent and (2) the source of water used for manufacturing the ice cubes that contained significant amount of lead would suggest that (3) it was neither originated from the treated tap water supply nor bottled mineral water or (4) perhaps contaminated during manufacturing process. Further studies exploring the source of water used for manufacturing these ice cubes as well as the handling process among food operators deserve consideration.

Keywords: Ice cubes; faecal coliforms; heavy metal elements; Johor Bahru, Malaysia

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