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Comparative Evaluation of Drinking Water Quality from Water Dispensers Across Academic and Administrative Zones at Faculty of Applied Sciences, UiTM Shah Alam

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Structured Abstract

Background: Drinking water dispensers are widely used in universities to provide convenient access to potable water. However, deterioration in water quality may occur due to inadequate maintenance, filter ageing, and microbial regrowth. Despite their widespread use in Malaysian universities, limited studies have compared drinking water quality between academic and administrative zones. This study evaluates and compares the drinking water quality from dispensers in both zones at the Faculty of Applied Sciences, UiTM Shah Alam, based on the National Standard for Drinking Water Quality (NSDWQ) set by the Ministry of Health (MOH), Malaysia.

Methods: Eight water quality parameters were analysed, including pH, turbidity, total dissolved solids (TDS), color, total hardness, residual free chlorine, heavy metal (lead), and microbiology quality (Escherichia coli). Total dissolved solids were determined using the gravimetric method, while total hardness was measured by EDTA titration. Then, pH was measured using calibrated buffer solutions, turbidity by the nephelometric method, color using the APHA method and lead by flame atomic absorption spectroscopy. The results were compared with NSDWQ guideline values.

Results: The turbidity, color, total dissolved solid, total hardness, lead and residual free chlorine levels in drinking water from dispensers in both academic and administratives zones complied with NSDWQ limits. However, pH values in 8 out of 11 dispensers (72.73%) were outside the acceptable range (6.5-8.5). In addition, Escherichia coli was detected in 6 dispensers (54.55%), indicating potential for microbial contamination and failure to meet microbiological safety requirements. No marked difference was observed between academic and administrative ones in terms of overall compliance.

Conclusion: The findings indicate that although most physical and chemical parameters complied with NSDWQ standards, non-compliance in pH and the presence of Escherichia coli highlight potential health risks associated with water dispenser use in both zones. These results emphasise the need for routine monitoring, regular maintenance, and systematic cleaning of water dispensers to ensure safe drinking water for campus users.

Keywords: Drinking Water Quality, Water Dispensers, National Standard Drinking Water Quality (NSDWQ), *Escherichia coli*, University Campus

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