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Automated liquid handlers (ALHs) are increasingly used to improve throughput, pipetting accuracy and prevent occupational injuries to the technical staff due to intensive manual pipetting. Standardized procedures for calibration of standard piston operated pipettes exist and many laboratories calibrate their pipettes with defined intervals. However, less standardized is the routine validation and verification of ALHs, though suggestions to how it should be performed exist. Commercial solutions have also been introduced.

A 7-step serial dilution of Orange G was prepared manually in quadruplicates in a flat bottom 96-well microtiter plate (BD Falcon) by means of calibrated pipettes (column 9-12). This was used as a standard row. Each pipette of the liquid handler (1 up to 8) dispensed a selected volume (1 to 200µL) of Orange G eight or more times into the wells of the microtiter plate. All wells contained a total of 200µL liquid. The optical density (OD) was read at 490 nm, and the dispensed volume of each pipette was calculated based on a plot of volume and OD of a known set of Orange G dilutions. Finally, the percent inaccuracy (%d) and the imprecision (%CV) of each pipette was calculated.

REFERENCES