

Benefits of using a Hydra DT for low volume wet dispenses.

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Introduction

The following experiments were conducted to measure the precision (%CV) of a Thermo Scientific Hydra DT 0.5-100 μ l stand-alone unit for 0.4ul and 0.5 μ l wet dispenses. This instrument was run from a laptop with ControlMate Software version 1.1.22. The Controlmate software provided a higher level of function with options such as pauses and with a 3-position xy stage walk away capabilities. These dispenses were neat transfers, for example 0.5 μ l was aspirated and dispensed into a plate. Neat transfers do not require additional liquid, and users can reduce reagent costs. 10% Tartrazine dye (yellow dye) was selected for this experiment because more concentrated dyes precipitate. The Hydra DT is useful in applications such as low volume PCR, plate pooling and serial dilutions (3 position stage). This disposable tips (D.A.R.T.s) eliminate carryover and contamination concerns.

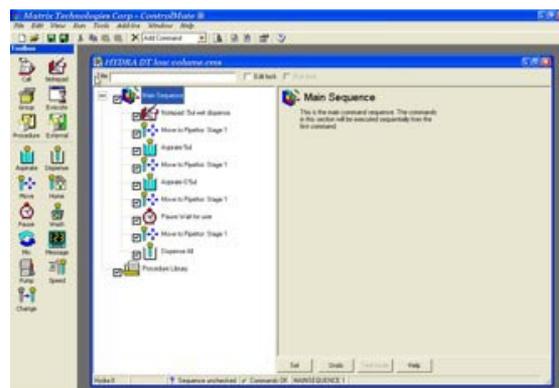
Materials & Methods

Chemicals and Reagents

- Distilled Water
- 10% Tartrazine Dye Solution

Instruments and Accessories

- Standalone Thermo Scientific Matrix Hydra DT 0.5-100 μ l CAT# 1096-DT-100
- Thermo Scientific Matrix Reservoir 96 125 ml- Cat# 1064-05-5
- Thermo Scientific Matrix 96 well microplates – Cat# 4915
- Tecan GENios reader
- 500 ml Graduated cylinder
- Centrifuge
- Microplate lids
- Tartrazine
- Measuring utensil
- Calibrated multi-channel pipettor
- 100 μ l Tips Cat# 5506
- Thermo Scientific Matrix WellMate – Cat# 201-10001
- Microplate Shaker
- ControlMate Software Version 1.1.22



Description of the Procedure

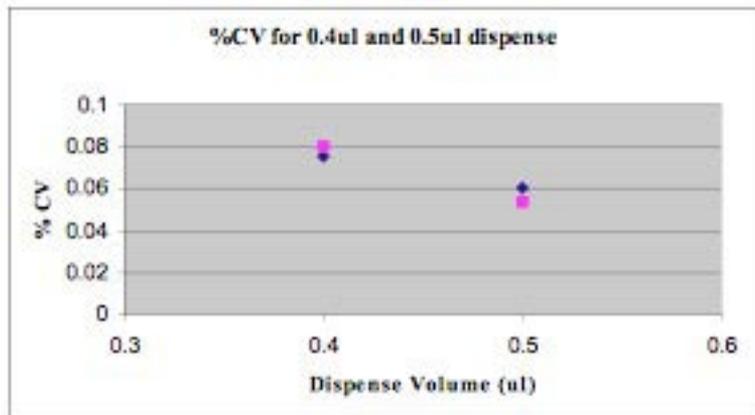
- Multiple 96-well microplates were filled with 250 μ l of distilled water using the Wellmate.
- 0.4 ul was aspirated from a 125ml reservoir containing 10% Tartrazine to perform a neat transfer.
- 0.4 ul dispensed into the distilled water filled 96-well microplates.
- The plates containing Tartrazine and distilled water were placed on the microplate shaker for 5 minutes at an efficient speed setting.
- The plates were covered and centrifuged for 1 minute at 1750 rpm.
- Plates were read on a Tecan GENios reader at wavelength 405 nm, 5 flashes.
- A tip change was performed with each new plate.
- Above process repeated for .0.5ul Tartrazine dispense.

Results

Figure 1.

Dispense Volume	Average	STDEV	%CV
0.4 µl	0.438317	0.033082	7.55%
	0.421616	0.033713	8.00%
0.5 µl	0.319328	0.019175	6.00%
	0.313691	0.016827	5.36%

Figure 2.



Conclusion

The 0.5ul dispense %CV were in the lower range compared to that of the 0.4ul dispense. This could be due to the fact that the Thermo Scientific Matrix Hydra DT, is calibrated to perform 0.5ul dispenses. The low %CV indicated that with some optimization the 0.4ul dispense could be performed using the Hydra DT. Based on the results demonstrated above, the Hydra DT produces low %CV and supports the use of the Hydra DT for low volume wet dispenses.

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