

Ultra Yield® Flask New Additions: New Flask Sizes & Bi-directional Transfer Cap

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Thomson's Ultra Yield™ Flasks (patented) have proven over the last decade to enhance the growth of microbial cells & E. coli. The patented flask design makes them the workhorse of protein and DNA labs worldwide. The Thomson Ultra Yield™ Family of products is expanding into new sizes. The Ultra Yield™ Flasks are now available in the following sizes: 125mL, 250mL, 500mL, 1.5mL

and 2.5L. When increased safety is needed, a new vented screw cap is available for the 1.5mL and 2.5L Ultra Yield™ Flasks. Ultra Yield™ Flasks in conjunction with the new aseptic Transfer Cap allows for the transfer of cells for scale up or seed cultures. The ability to pump into the Ultra Yield™ Flasks makes filling with media from a bulk source a simple aseptic method. The

Transfer Cap in conjunction with the Ultra Yield™ Flasks product line can be used for reagent addition, seeding of larger bioreactors or pumping of media into flasks from large drums or bags, and other liquid media transfers into and out of bioreactors

Abstract

A study was conducted to evaluate the impact of cell density and protein yield between the Thomson 2.5L Ultra Yield™ Flask with Plasmid +® Media and the Corning® 2L Flask with TB. The flasks were sampled at 3 time points for both DNA concentration and O.D. Additionally, flasks were placed in different shaker styles to compare yields.

Method

6 flasks were setup for this experiment. Flasks 1-4 were 2.5L Ultra Yield™ Flasks filled with 500mL Plasmid +® Media and placed in 4 different shaking incubators (2 floor models and 2 benchtop models). Flask 5 was a Corning® 2L filled with 500mL TB and Flask 6 was a 2.5L Ultra Yield™ Flask with TB. Flasks were inoculated 1:100 from a single master overnight culture and then grown at 37°C. At 20 hours, 22 hours and 24 hours, 100µL samples were taken. After 24 hours of growth a final O.D. measurement was collected. For each of the samples collected, the plasmid was extracted following the Qiagen Mini-prep Kit. Results from the Mini-prep were used to infer DNA concentration in the growth flasks.

Results

DNA purity was evaluated by absorbance readings to detect possible contaminants. The most common purity calculation is the ratio of the absorbance at 260nm divided by the reading at 280nm. Good-quality DNA will have an A260/A280 ratio of 1.7-2.0. Both the Thomson 2.5L Ultra Yield™ Flasks and Corning® 2L Flasks yielded acceptable absorbance readings indicating good DNA purity. Fig 1 shows the 2.5L Ultra Yield™ Flasks had a 300% higher concentration of good quality DNA at three timepoints compared to the Corning® 2L Flasks utilizing floor model shaking incubator. This increase in yield necessitates the need to use a Qiagen Mini-prep to avoid overloading the Giga-prep when purifying the DNA. A comparison of Plasmid+® Media and TB was looked at for yields using the Thomson 2.5L Ultra Yield™ Flask. A significant increase in quantity and quality of DNA measured by A260, A280, A260/280 and A260/230. Shaker type was also evaluated to see if a table top shaker can efficiently shake the 2.5L Ultra Yield™ Flask compared to a floor model shaking incubator. The floor model shaking incubator showed a 2 fold increase over the table top models, see Fig 3.

Conclusion:

The Thomson 2.5L Ultra Yield™ Flask produces excellent quality DNA (data not shown). The Ultra Yield™ Flask/ Plasmid +® combination produced 300%-400% more DNA than comparable Corning® flasks. Part of the increased DNA yield can be attributed to growth at a higher starting culture, 20 OD in Thomson 2.5L Ultra Yield™ Flasks vs. 7 OD in Corning® 2L Flasks. Using a floor shaking incubator ensures proper mixing yielding higher OD and DNA yields. The Thomson 2.5L Ultra Yield™ Flask provides a superior growth vessel that can greatly reduce the number of shakers and labor needed to grow up large quantities of DNA.

2.5L Ultra Yield® Flask VS 2L Corning® Flask Yields

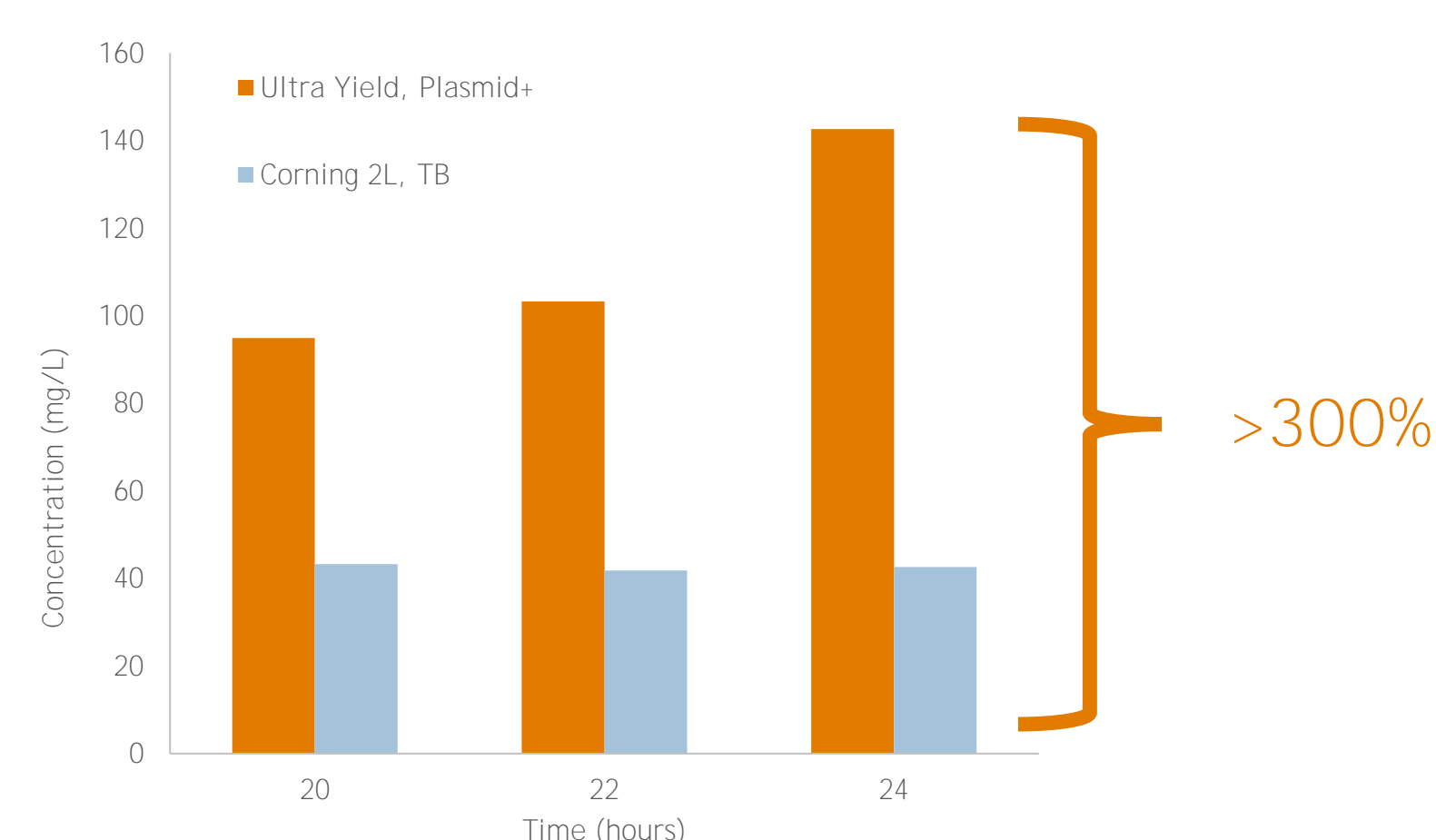


Fig 1. This chart shows the increased DNA concentration of the 2.5L Thomson Ultra Yield™ Flask as compared to the 2L Corning® Flask at 3 time points as followed by DNA Mini-prep.

Comparison of OD at 24hr 2.5L Ultra Yield® vs. 2L Corning®

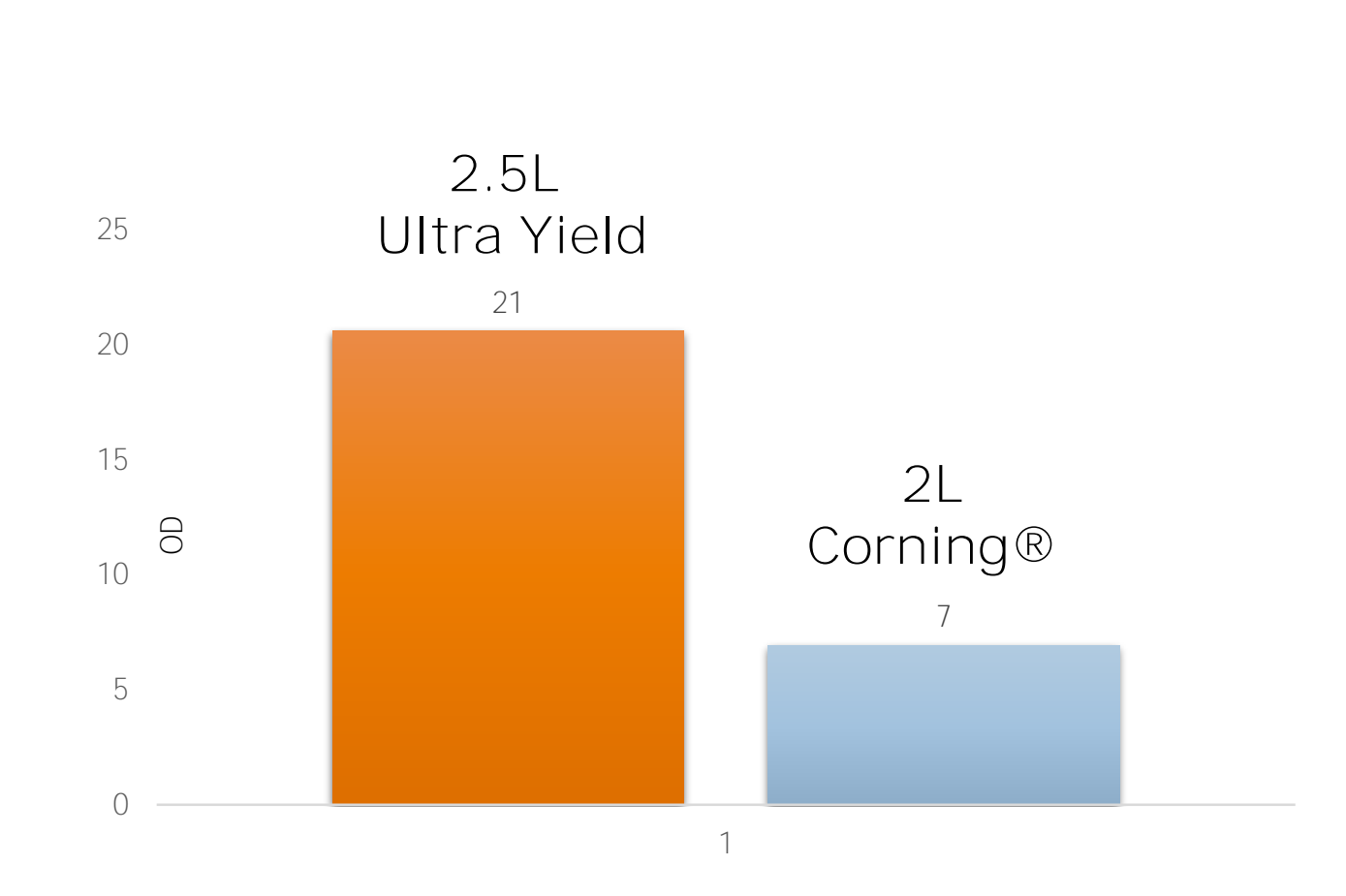


Fig 2. This chart shows the difference in OD measurements between the 2.5L Ultra Yield and 2L Corning® flask at 24 hours of growth

Recommended Growth Volumes with Plasmid+®

- MINI Prep: 96 well plate, 0.5-1mL
- MAXI Prep: 24 well plate, 4-5mL
- MEGA Prep: 125mL Ultra Yield™ Flask, 35-50mL
- MAXI Prep: 250mL Ultra Yield™ Flask, 75-100mL; or 500mL Ultra Yield™, 150- 200mL
- GIGA Prep: 500-1000mL, Thomson 1.5L or 2.5L Ultra Yield™ Flask

Use a Floor Model Shaker for Best Results

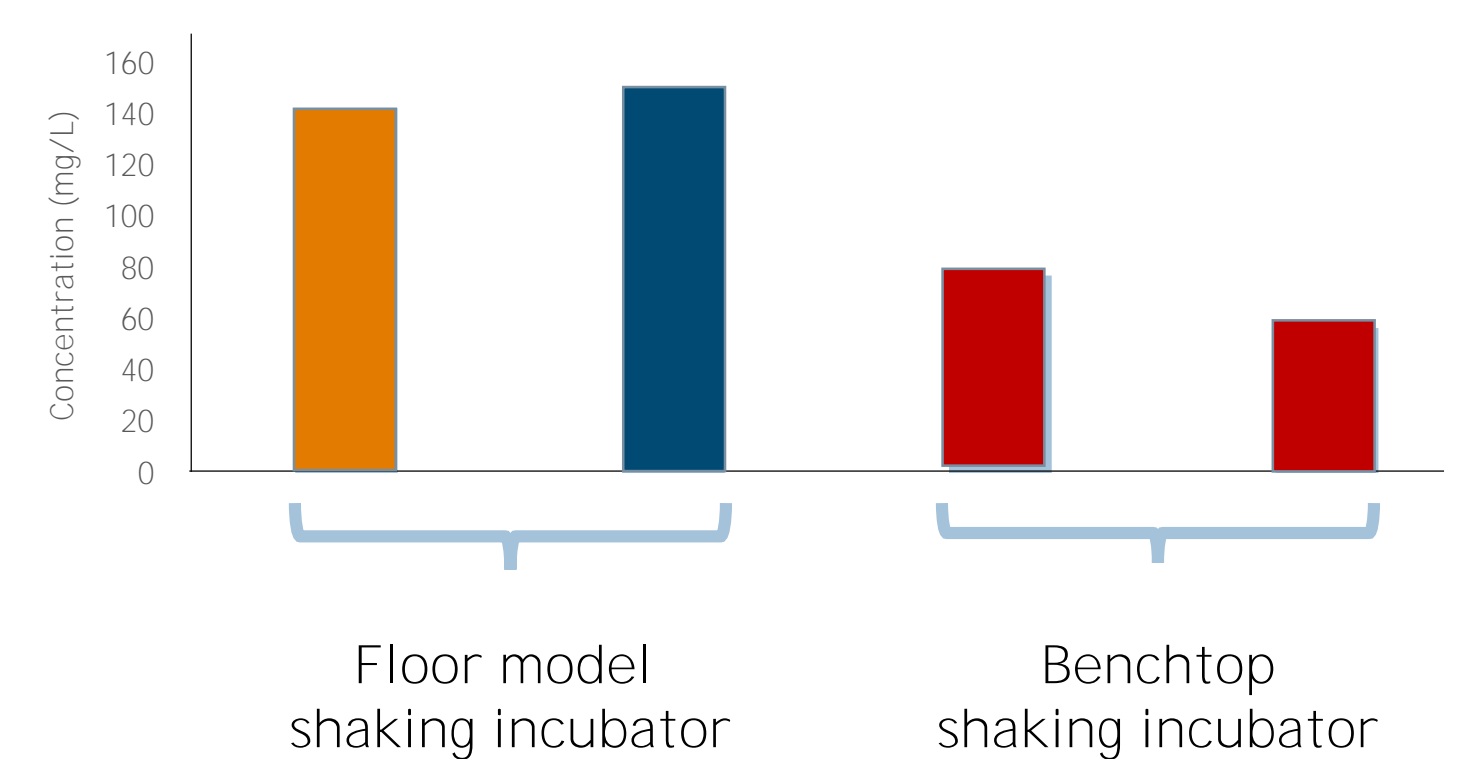


Fig 3. Comparison of DNA expression between floor model shaking incubator and benchtop shaking incubator.

New Additions to the Ultra Yield® Family: Flasks, Transfer Cap & Vent Cap

Ultra Yield™ Flasks & AirOtop™ Seals come in the following sizes: 2.5L, 1.5L, 500mL, 250mL & 125mL

Key Features

- 10x increased aeration over standard shake flasks
- Increased DNA & protein production
- Fully scalable results
- Replacement for glass flasks
- Fits all standard flask clamps
- Easily adaptable into microbial growth protocols
- Sterile, disposable, single-use flasks from 125mL – 2.5L



New 1.5L Ultra Yield™ Flask



Ultra Yield™ Flask 125mL, 250mL, 500mL, 1.5L & 2.5L

Bidirectional Transfer Cap for 1.5L & 2.5L Ultra Yield® Flasks

Key Features

- Bidirectional Transfer
- Fits 1.5L & 2.5L Ultra Yield™ Flasks
- C-Flex 1/8" Tubing
- Sterile

How to Transfer or Feed

1. Screw on the Bidirectional Transfer Cap
2. Connect to your receiving vessel by Tube Fusing or using our Luer Lock option
3. Liquid can then be pumped either into or out of the flask



NEW Transfer Cap for Ultra Yield™ Flask 1.5 & 2.5L



1.5 & 2.5L Ultra Yield™ Flask with Vent Cap