APPLICATION NOTE No. 445

Fast and Safe Sample Handling with Eppendorf Conical Tubes SnapTec® 50

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Abstract

Conventional 50 mL Conical Tubes with screw cap pose a major handling drawback: they require complex two-hand operation and are prone to mix-up and contamination. The alternative is SnapTec® offering easy, one-hand operation known from smaller tube formats and as much safety as regular screw caps.
Here we demonstrate that Eppendorf Conical Tubes SnapTec 50 compared to standard screw cap and similar snap cap conical tubes from other manufacturers provide a considerable advantage reducing handling time by almost 40%, minimizing contamination risk and improving comfort for the user. This makes the Eppendorf Conical Tubes SnapTec 50 the ideal tube for a wide spectrum of demanding laboratory applications, where safety as well as quick and comfortable handling are required.

Introduction

Conventional 50 mL conical tubes with screw cap are one of the most wide-spread tube formats and are used in a variety of molecular biology, microbiology and biochemistry workflows. Typical applications include handling, storage and transport of samples or reagents as well as centrifugation, mixing, incubations and cell culture. In this large range of applications, conical tubes must typically withstand conditions regarded as extreme: temperatures between - 86 °C to 100 °C, high centrifugal forces (in the range of 20,000 x g), aggressive chemicals or solvents and many others.

While providing good safety, the screw caps used in the conical tubes typically pose a major handling drawback: they require time-intensive two-hand operation and are prone to mix-up and contamination. The newly introduced alternative is SnapTec – a snap cap offering easy one-hand operation known from smaller tube formats and equal safety and integrity as a regular screw cap.
In this application note, handling times in the standard cell culture workflow were investigated to assess speed and comfort of SnapTec usage under application-relevant conditions. The results demonstrate that Eppendorf Conical Tubes SnapTec 50 compared to a standard screw cap offer considerable advantage by reducing handling time by almost 40%, minimizing contamination risk and improving comfort for the user.
This makes Eppendorf Conical Tubes SnapTec 50 ideal for a wide spectrum of demanding laboratory applications where safety and sample integrity as well as quick and comfortable handling are required.

Material and Methods

28 tubes of each cap type (Eppendorf Conical Tubes SnapTec 50 and Eppendorf Conical Tubes 50 mL) were used for standard cell culture procedure: cell passaging and seeding. Centrifugation steps were performed with Eppendorf Centrifuge 5810 R with swing-bucket Rotor S-4-104. The handling time required for each step as well as ease of use of the cell handling procedure were assessed

Results and Discussion

While providing good safety, the screw caps used in conical tubes pose a significant handling disadvantage: they require complex and time-intensive two-hand operation and are prone to mix-up and contamination.
The alternative is Eppendorf SnapTec – a snap cap with easy one-hand operation, which assures considerable time saving, minimizes contamination risk and improves comfort for the user – particularly in demanding and contamination-sensitive applications like cell culture.
Here we compared Conical Tubes SnapTec 50 to standard screw cap conical tubes (Eppendorf Conical Tube 50 mL) in respect to handling times required in standard cell culture procedure **(Fig. 1)**. As shown in **Table 1**, SnapTec allows considerable time saving of 36% as compared to a standard screw cap – mainly due to numerous cap opening/closing steps in the procedure. Furthermore, the contamination risk has been minimized and overall comfort for the user considerably increased (data not shown, personal experience of the testing user).

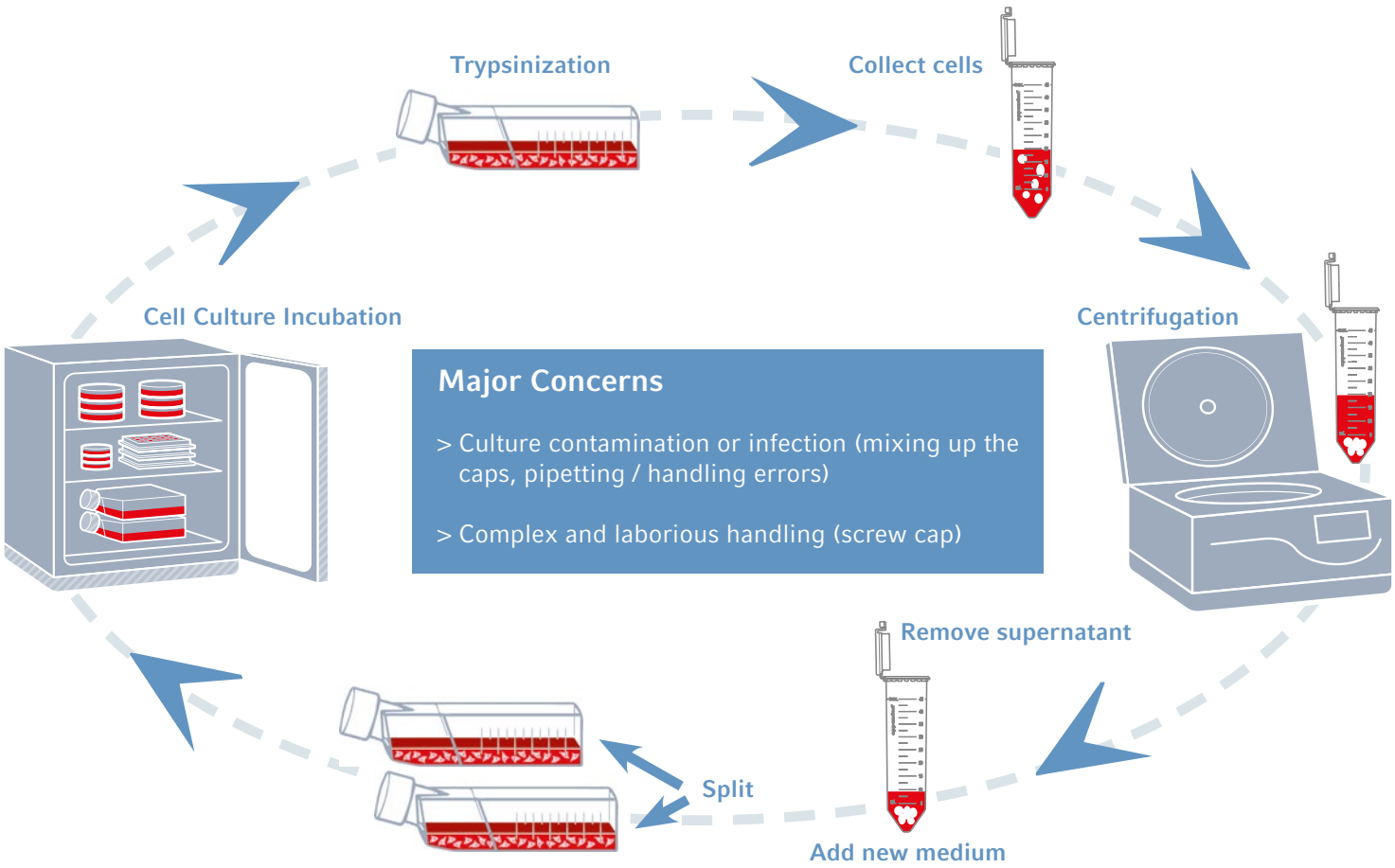

Figure 1: Generic cell culture workflow used in this application note to assess handling speed. Key workflows steps are shown.

Handling steps description	Handling time (sec) for 28 tubes	
	Screw Cap	SnapTec® 50
Annotate the tubes	60	30
Open the tubes	60	40
Transfer cell solution in tubes	na*	na*
Close the tubes	60	40
Place the tube in a centrifuge	na*	na*
Centrifuge at 1,000 rpm for 5 minutes	na*	na*
Remove the tubes from the centrifuge	na*	na*
Open the tubes	60	40
Remove the supernatant, resuspend the cell pellets in culture medium, take an aliquot for cell counting	na*	na*
Close the tubes	60	40
Cell counting	na*	na*
Open the tubes	60	40
Transfer a defined amount of cells in cell culture consumable	na*	na*
Total handling time (sec)	**360**	**230**
Difference (%)	**36%**	

* identical step/time for both tubes types (snap and screw cap)

Table 1: Handling times of standard cell culture procedure using Eppendorf Conical Tubes SnapTec 50 and screw cap conical tubes.

Conclusion

The results provided here demonstrate that Eppendorf Conical Tubes SnapTec 50 compared to standard screw cap, or snap cap conical tubes from other manufacturers provide equal or better safety parameters.
Furthermore, the handling speed in a standard cell culture workflow has been investigated and the results indicate that Eppendorf Conical Tubes SnapTec 50 compared to standard screw cap conical tubes provide a considerable advantage reducing handling time by almost 40% as well as minimizing contamination risk and significantly improving comfort for the user.
This makes Eppendorf Conical Tubes SnapTec 50 ideal tubes for a wide spectrum of demanding laboratory applications where safety, sample integrity as well as quick and comfortable handling are required.

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