Towards the replacement of foetal bovine serum in cell culture application: the example of A549 cells

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- concerns.
- proteins, and is a major source of variability in *in vitro* assays.
- substances.
- reproducible, human-relevant results.

Materials and Methods

 \leftrightarrow







Introduction

♦ Foetal bovine serum (FBS), used as a supplement in cell culture media, presents significant scientific and animal-welfare

♦FBS contains an undefined mixture of macromolecules, such as hormones, vitamins, growth factors, and transport

 \diamond The exact composition of FBS is unknown, which may lead to unexpected and undesirable interactions with test

 \diamond An estimated 800,000 liters of FBS are produced each year, which corresponds to approximately to 2 million calf fetuses.

 \diamond There are numerous commercially available supplements or complete media replacements that can be used instead of FBS. The use of a chemically defined medium with human cell based model systems allows for the generation of

Growth curve and doubling time

A549 seeding in 24 well-plates

Detach cells with TryPLE[™] every 24h

Count cells using Millipore Scepter 2.0

Calculate the doubling time:

$DT = T \ln 2 / \ln(Xe/Xb)$

DT: Doubling time T: Incubation time Xb: Cell number at the beginning of the incubation time Xe: Cell number at the end of the incubation time

Freezing \leftrightarrow

2 x 10⁶ cells per freezing condition:

Freezing conditions

- 1) FBS free medium 40% + FBS 50% + DMSO 10% (control)
- 2) FBS free medium 90% + DMSO 10%
- 3) FBS free medium 50% + DMSO 7.5% + ProFreeze-CDM (Lonza) 42.5%
- 4) FBS free medium 50% + CnT-CRYO50 50%





generation of more reproducible results. Our preliminary results suggest that animal derived components can be replaced in the culture of A549 cells, which represents a considerable advance in the reproducibility of cell culture that could be applied to many other cell lines.

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XVIVO™	HL-1 ™	XerumFree™ XF212
Lonza	Lonza	TNC Bio
mplete medium	Supplement 10% in basal medium	Supplement 1% in basal medium
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