

# IMPROVING REAL-TIME OD MONITORING OF *LACTOBACILLUS REUTERI* IN RTS-1C

An unexpected OD decline was associated with loss of suspension homogeneity. Continuous Reverse-Spin® mixing at 1000 rpm produced a stable OD plateau in the follow-up run.

## BACKGROUND

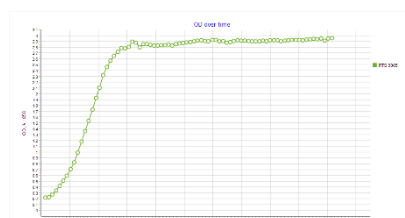
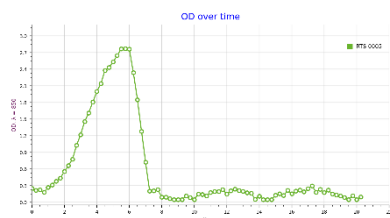
A research laboratory monitored the growth of *Lactobacillus reuteri* in real time using the RTS-1C Personal Bioreactor with single-use TubeSpin® vessels under cultivation conditions intended to limit oxygen exposure. OD was recorded automatically at 850 nm. The aim: continuous growth curves comparable to published data, without opening the culture.

## THE CHALLENGE

- Growth tracked normally for approximately six hours, then an unexpected decline of the OD signal was observed instead of the expected stationary phase.
- Visible biomass remained in the vessel. Manual resuspension and re-measurement restored a high OD reading, indicating that the signal decline did not reflect a loss of biomass.
- The team needed to determine whether the unexpected signal behavior was related to the cultivation protocol, the organism, or the instrument.

## THE SOLUTION - REVISED SETTINGS

- Manual resuspension restoring the OD signal suggested that sedimentation or aggregation had reduced suspension homogeneity during the original run.
- A follow-up run was performed with continuous Reverse-Spin® mixing at 1000 rpm (period 5 s), 20 mL culture volume, 37 °C, and OD measurement every 15 min (RTS-1C signal at 850 nm).
- The vessel was sealed to limit gas exchange during the run.



## RESULT

- The OD signal increased from approximately 0.2 to 2.9 during the first six hours and then remained stable near 2.9 until the end of the approximately 20-hour run.
- The stable signal obtained under the revised settings supports the interpretation that the earlier OD decline was associated with insufficient suspension homogeneity rather than an obvious hardware-related signal error.

## AT A GLANCE

### APPLICATION

Real-time OD monitoring of *L. reuteri* · MRS · 37 °C · conditions intended to limit oxygen exposure

### CHALLENGE

Unexpected OD signal decline after ~6 h; visible biomass remained

### ROOT CAUSE

Sedimentation or aggregation reducing suspension homogeneity

### SOLUTION

Continuous Reverse-Spin® mixing at 1000 rpm (period 5 s); OD every 15 min

### OUTCOME

Stable OD plateau (~2.9) maintained for ~20 h under revised settings

## RTS-8 Plus

### POTENTIAL NEXT STEP



Measures at standstill - an alternative optical approach for low-oxygen cultivation

Would allow additional O<sub>2</sub> (0–100%) and pH (4.0–8.5) monitoring via non-invasive sensor spots

8 parallel channels - screen media, mixing & sealing conditions in one run

OD measurement range up to 100 OD<sub>600</sub> equivalent (factory calibration to 50–75)