Application Note : Live cell sorting of lactic acid bacteria in yogurt using the Sony Cell Sorter SH800S

Summary

Flow cytometry is used for a broad range of applications, including high-throughput analysis of the single cells. To date, there is a growing demand to use the flow cytometry for analysis bacteria in food and beverages. In this application note, we demonstrate the use of the SH800S cell sorter for sorting lactic acid bacteria in commercial yogurt into live and dead cells.

Methods

SYTO 9 and PI solution (1/1000 volume of total sample) were added to commercial yogurt (500-fold dilution with PBS) and incubated for 15 min. The sample was loaded onto the SH800S cell sorter for sorting live cells. Cell sorting performance was evaluated based on the recovery of the live cell fraction following reanalysis of the sorted cells.

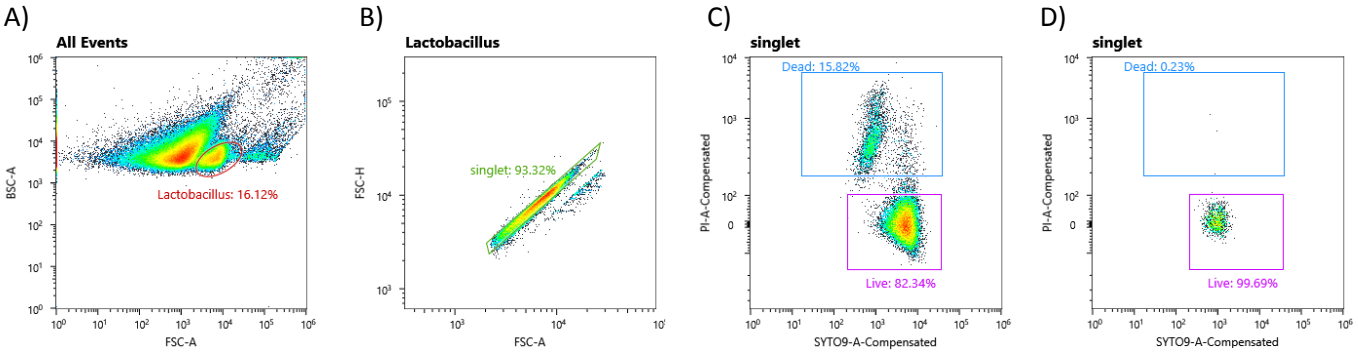


Figure 1: Detection and sorting of live/dead bacteria in yogurt

A) Gated lactic acid bacteria (FSC vs. BSC)
B) Gated singlets (FSC-A vs. FSC-H)
C) Gated live cells (SYTO 9+/PI- fraction in SYTO 9 vs. PI)
D) Recovered live cell fraction following reanalysis of sorted live cells (SYTO 9 vs. PI)

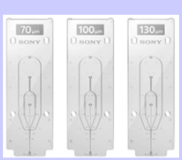
Cell Sorter SH800S

Sorting Made Simple™

The benchtop SH800S cell sorter permits sorting of a wide range of cell sizes for many applications using the 70-µm, 100-µm, and 130-µm microfluidic sorting chips. This novel, chip-based design is fully integrated with comprehensive fluidics controls and advanced automation for set-up, acquisition, sorting, and analysis to make sorting less subjective, more precise and easier to perform.

System software is intuitive and supports sorting into tubes and 96- and 384-well plates. The software generates FCS 3.0 and FCS 3.1 files that can be exported to third party analysis tools.

The SH800S is for non-clinical research use only and is a Class 1 laser product.



Results

Live/dead analysis showed that 82.34% of the lactic acid bacteria in the sampled commercial yogurt were viable (Fig. 1C). The recovery of over 99% live cells, following reanalysis of sorted live cells, indicated successful sorting with extremely high purity (Fig. 1D). These results strongly support the outstanding performance of SH800S in sorting small cells such as lactic acid bacteria.

Furthermore, SH800S is equipped with a disposable flow cell (a sorting chip) and an interchangeable sample line, thereby reducing the risk of cross-contamination. These features support simultaneous use of the instrument for multiple specimens, ranging from mammalian cells to bacterial cells.

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