

4035 - Quantification of active lactic acid bacteria by flow cytometry

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Abstract

Chr. Hansen produces lactic acid bacteria (LAB) for the food industry world wide. The bacteria are provided as frozen or freeze-dried biomass and when applied their performance is usually dependent on their active metabolism, eg. in the dairy industry where LAB metabolise lactose of milk into lactic acid and other by-products. Therefore, a major focus in process development and quality control is to provide a biomass of required size and quality. The discrimination between size and quality reflect the simple relationship that the cells not only need to be present. They also have to perform correctly by the customer and continue to do so according to the specified limits.

During the last couple of years, single-cell analysis of bacteria by flow cytometry becomes more and more a standard microbiological tool. At Chr. Hansen, flow cytometry is used in research and development to characterize and enumerate bacteria in different applications. Especially for enumeration of bacteria, a very precise and reproducible assay has been setup. The system is almost completely automated by use of robotic sample preparation and autosampling, and even with capacity for high-throughput performance.

This presentation address the analytical potential and limitation for the quantification of LAB by flow cytometry especially relative to the traditional cultivation technique. Special focus is directed to the combined application of robotics and flow cytometry providing more, better and faster results than possible with related techniques.

Keywords: lactic acid bacteria, analysis, flow cytometry