

DuPont Qualicon RiboPrinter® System

APPLICATION PROFILE

Is This The Right Starter Culture? The RiboPrinter® Microbial Characterization System Has the Answer

Food manufacturers can only control their products if ingredients are just what the company ordered. How can they be sure? Accurate microbial analysis is the answer and genetics-based tests are the key to finding it.

Case in point: The cost benefits of buying starter cultures rather than creating them in-house appealed to a meat products manufacturer until the company realized it may have lost control of a crucial ingredient.

When the sensory quality of the company's raw, fermented goods began declining significantly, the producer made a detailed analysis of each item in the product ingredients. Among the ingredients was an important starter culture used in the fermentation process. The producer had been buying a range of cultures from a reputable supplier for many years and the make-up of the mixed starter in question was specified: *Micrococcus* species, *Lactobacillus* and *Staphylococcus carnosus* each in quantities of greater than 10⁹ colony-forming units (cfu)/gram. *S. carnosus* in particular gives a unique flavor to meat.

Profiling the Starter Culture

Assessing the culture and its quality required an in-depth profile of each item. Authenticating the culture was difficult using traditional biochemical methods that gave only subjective analysis and couldn't differentiate strains definitively.

Samples of the *Staphylococcus* cultures were turned over to the RiboPrinter® Microbial Characterization System for scrutiny. The RiboPrint® pattern for *Staphylococcus carnosus* (see Figure 1) could be linked to samples of *Staphylococcus*, but other laboratory tests showed that the organism was present only at 0.01% of the needed concentration. In addition other species of *Staphylococci* that had not been requested were present in much higher numbers. Samples of these unwanted organisms were matched to RiboPrint® patterns for *Staphylococcus cohnii* and *Staphylococcus saprophyticus*.



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Correcting the Formula

With this information in hand, the meat products manufacturer challenged the culture supplier on the formulation. The supplier admitted running into problems getting high yields of the needed *Staphylococcus carnosus*. The low concentrations of *S. carnosus* found in the starter culture confirmed the organism's viability problems.

Additionally, the confirmed presence of *S. cohnii* suggested that the culture was being contaminated by the supplier's personnel. (Information in the public domain indicated that there is a strong association between the organism and humans.)

Solutions

RiboPrinter® system characterization gave both the manufacturer and the culture supplier the definitive microbial profile they needed to control the quality of their products and the process by which they were made. Quality of the meat products improved with changes made based on the RiboPrint® patterns and the culture supplier suddenly had access to a new, definitive way of analyzing the microbial profile of its cultures.

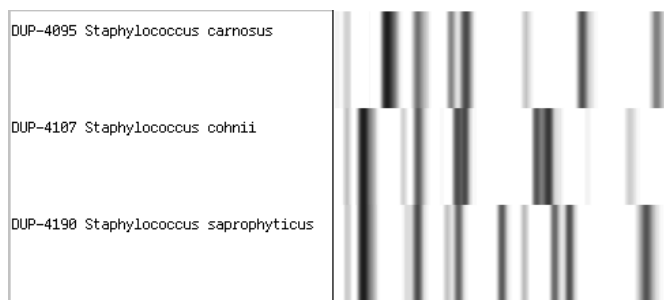


Figure 1. RiboPrint® patterns show the clear genetic distinction between *Staphylococcus carnosus*, the desired fermenting agent, and *Staphylococcus cohnii* and *Staphylococcus saprophyticus*, undesirable contaminants. The RiboPrinter® system became a valuable quality control tool for both the purchaser and supplier of the starter cultures.

DuPont Qualicon
 ESL Bldg 400, PO Box 80400
 Wilmington, DE 19880-0400 USA
 Tel: 800-863-6842 or 302-695-5300
 Fax: 302-695-5301
 Europe: 00 800 3876 6838
 Singapore: +65 6586 3635
www.qualicon.com



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