



... A WAY TO **CONTROL BITTERNESS** IN YOUR CHEESE

OPTI STRAIN™ CONCEPT



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Introduction

Bitterness is one of the most common off-flavors in cheese. It results from accumulation of bitter-tasting peptides formed by the action of proteolytic enzymes on casein. Reducing or eliminating bitterness will greatly improve overall flavor acceptability of the cheese. CSK scientists have developed several concepts to accomplish this.

Features and benefits

Flavor development in cheese is a dynamic biochemical process that takes place during aging. In most cheese varieties, proteolysis and subsequent amino acid catabolism are the main contributors to flavor development. Imbalances in this process can generate hydrophobic peptides that, if present at sufficiently high concentrations, can give rise to bitterness.

These peptides originate mostly from α s1- and β -casein, in particular the C-terminal portion of β -casein, which is the principle source of bitterness. Bitterness can be controlled by preventing formation of bitter peptides, and/or by increasing the rate of their degradation to non-bitter peptides.

Imbalances in proteolysis in the cheese are mainly caused by the choice of the starter and/or processing conditions. Due to the need for efficiency of production, formation of bitter peptides cannot always be prevented. The balance can be restored by the use of special debittering adjuncts.

CSK debittering adjuncts have been selected based on efficiency in degrading bitter peptides. They are high in enzymes such as the aminopeptidase PepN and have a high rate of autolysis. When the cell lyses, it releases intracellular enzymes in the cheese matrix which play a major role in debittering activity.

Application

Debitting adjunct cultures are sold as concentrated frozen pellets and can be added directly to the cheese milk along with a standard acidifying culture. They increase the normal starter population without increasing the rate of acid production during the manufacturing process.

These adjunct cultures are effective in American Style cheese such as Cheddar and continental cheeses like Gouda and Havarti. They remove bitterness but do not impact overall flavor. In blue-veined cheese like gorgonzola, debittering cultures can be used to balance flavor.

Expert Assistance

CSK has headquarters and product located in Wisconsin to serve your business and offer custom solutions. Our cheese experts will work closely with you to achieve optimal benefits from debittering adjunct cultures. For application advice and service, please contact a member of our U.S. staff.

About CSK

For over 100 years, CSK has provided ingredients to the dairy industry throughout Europe. Currently, CSK has operations in more than 40 countries, and our products are used in over 12% of all cheese produced worldwide. This large-scale success enables CSK to bring U.S. cheesemakers excellent dairy cultures for unique flavor development, solutions that fit your process, and an unwavering commitment to create the best product for your business.

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CSK food enrichment USA, Inc.
1026 South Avenue
Oostburg, WI 53070
Phone: 608-218-3810
www.cskfood.com

CSK Food Enrichment C.V.
Pallasweg 1
8938 AS Leeuwarden
The Netherlands
Phone: +31-58-284-4242

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