GoldenLine

Starter cultures GoldenLine

for manufacturing fermented milk products
SOYUZSNAB-IS A LEADER OF INNOVATIONS IN BACTERIAL CULTURES’ PRODUCTION

SOYUZSNAB Group is a world leading innovative company, that has made a progressive leap in the development of bacterial cultures production and development.

SOYUZSNAB holds a strong position in the Russian and International marketplace of starter and other bacterial cultures by its competitive advantage. These advantages include unique collection of microbial strains which are permanently being replenished; «Know-how» in production cycle; emphasis of final product’s sensory characteristics; refusal of using genetically modified organisms; perfect warranty system.

SCIENTIFIC BASIS

The production of bacterial cultures at SOYUZSNAB Group is based on long-term microbiological research. Continuous work by SOYUZSNAB Group Research and Development Complex team has resulted in the development of a collection of 3000 censoring microbial strains. The natural sources of microorganisms are from different places from all over the world. A rich diversity of initial strains allowed to make for a unique combination of starter cultures which takes into account of the specificity of a concrete region, the requirements specification and the taste preferences of the consumers.

«KNOW-HOW» IN PRODUCTION

The fermenter lines, where biomass of microorganisms grow, are completely automated and factors out humans in the technical process. Science and Production Association «Zelenyi Linii» started using its own creation in concentration of biomass using a shielding medium for microorganisms and sublimation process. Qualified experts of SOYUZSNAB Group create unique, direct analogs in the world’s market for multi-component starter cultures. The composition of starter culture contains up to 15 types of microorganisms and many types of strains.
THE BEST CHOICE FOR PRODUCTS NOWADAYS

Currently, the starter culture’s production by Science And Production Association «Zelenyi Linii» is the one and only diversified ingredients that offers unity by the Golden LIne trade name. This is a broad spectrum of starter, protective and probiotic cultures for the dairy industry which counts more than 170 items.

The starters made by Science and Production Association «Zelenyi Linii» allow the production of prime quality products, such as Ryazhenka, Kefir, Yogurt, semi-hard cheese, semi-soft cheese and other type of cheese-based products such as: farmers cheese, sour cream, mazoni, airan, azidofilin and others. SOYUZSNAB has been acknowledged as a leader in production of starters for kefir-set products, which is getting more and more popular in Europe, USA and China. One of the main goals in the manufacturing circle of Science and Production Association at «Zelenyi Linii» is the sensory characteristics of the final product. This Method allows Golden LIne products to have a successful advancement in key markets.

Unique content of microflora with five basic types of microorganisms, which are good for digestion, by preventing disbacteriosis growth and can be a general prophylaxis instrument (Lactobacillus casei, Lactobacillus acidophilus, Lactobacillus plantarum, Bifidobacterium sp., Lactobacillus rhamnosus) used for probiotic cultures production.

WARRANTY

All products of SOYUZSNAB Group have a strong position among leaders in the bacterial cultures ‘world market, because of international warranty standards.

Key parameters for starter’s production are controlled during whole technological process. The Research center as the developer of all the cultures use all capabilities of modern equipment to make multi-stage monitoring of production.

SOYUZSNAB Group Testing Laboratory Center also using more than 2000 different methods to control the quality of final product.

SOYUZSNAB Common Warranty Service is proved by Russian GosStandart Accreditation Certificate and Sanitary Epidemiological Surveillance Permit of Moscow region for work with microorganisms of 3rd and 4th group of pathogenicity. SOYUZSNAB Group Plants have ISO 22 000 and FSSC 22 000 certificates.
KEFIR
Is one of the most popular cultured dairy products in Russia and CIS countries with unique health properties. Its production in Russia takes about 2/3 of the cultured dairy products market.

HISTORY
Kefir originated in Northern Caucasus. Local people have always thought of it as of the drink of health and longevity and called it «Gift of the Heaven». Its recipe was kept secret.

Biologist Ilya Mechnikov, the Nobel Laureate, studied human ageing processes throughout his life. He was sure that early ageing occurred due to putrefactive bacteria, which poisoned the human body with their toxins. Mechnikov made a conclusion that kefir protects human body against intoxication, suppressing putrefactive processes, and elongates human life. Only bio-kefir enriched with probiotic cultures can be healthier than traditional kefir.

KEFIR
Kefir has all the benefits of cultured dairy drinks and is considered to be a dietary product. Its nutritional ingredients are easy to digest, that’s why kefir is especially beneficial for kids, elderly people and people recovering after illnesses. Health benefits of kefir are well-known, they originate from accumulation of positive bacteria. What is more interesting, its physiological effect can be different depending on the «age and strength» of the product.

HEALTH PROPERTIES OF KEFIR

• Supplies important nutritive elements in case of anemia and some diseases of gastrointestinal tract;
• Works as a perfect refresher and increases appetite thanks to the lactic acid and carbon dioxide;
• Has positive effect on people suffering from chronic fatigue syndrome, sleep and neurotic disorders.

«SOYUZSNAB» GC OFFERS A RANGE OF GOLDEN LINE STARTER AND PROBIOTIC CULTURES FOR KEFIR PRODUCTION
GOLDEN LINE STARTER CULTURES

<table>
<thead>
<tr>
<th>STARTER CULTURE</th>
<th>MICROBIOTA CONTENT</th>
<th>CHARACTERISTICS OF THE FINISHED PRODUCT</th>
</tr>
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</table>
| «Profiline» KF 22.11 KEFIR F | Streptococcus salivarius ssp. thermophilus, Lactobacillus delbrueckii subsp. bulgaricus, Lactobacillus delbrueckii subsp. lactis, Lactobacillus casei, Lactobacillus acidophilus, Bifidobacterium animalis ssp. lactis, Lactobacillus rhamnosus, Lactococcus lactis ssp. cremoris, Lactococcus lactis ssp. lactis biovar diacetylactis, Leuconostoc mesenteroides ssp. mesenteroides | • High viscosity and thick consistency  
• Delicate and «velvety» lactic acid flavor  
• Contains 10 types of beneficial microorganisms  
• Enriched with a complex of probiotic cultures |
| «Golden Time» KF 26.10 | Lactococcus lactis subsp. lactis, Lactococcus lactis subsp. cremoris, Streptococcus salivarius ssp. thermophilus, Lactococcus lactis subsp. lactis biovar diacetylactis, Lactobacillus rhamnosus, Lactobacillus plantarum, Lactobacillus casei, Bifidobacterium longum, Bifidobacterium breve, Lactobacillus acidophilus, Bifidobacterium animalis ssp. lactis, Lactobacillus reuteri | • Medium viscosity and fairly thick consistency  
• Pronounced lactic acid taste and odor with a delicate flavor of kefir  
• Creamy flavor  
• Contains 12 types of beneficial microorganisms  
• Enriched with a complex of probiotic cultures |
| «Golden Time» KF 22.10 IRISH | Streptococcus salivarius ssp. thermophilus, Lactobacillus delbrueckii subsp. bulgaricus, Lactobacillus delbrueckii subsp. lactis, Lactobacillus casei, Lactobacillus acidophilus, Bifidobacterium animalis ssp. lactis, Lactobacillus rhamnosus, Lactococcus lactis ssp. cremoris, Lactococcus lactis ssp. lactis biovar diacetylactis, Leuconostoc mesenteroides ssp. mesenteroides | • Medium viscosity and fairly thick consistency  
• Rich lactic acid flavor, well-balanced refreshing taste of kefir  
• Contains 10 types of beneficial microorganisms |
| «Golden Time» SC 30.60 | Streptococcus thermophilus, Lactococcus lactis subsp. lactis, Lactococcus lactis subsp. cremoris, Lactococcus lactis subsp. lactis biovar diacetylactis | • Provides thick and dense texture  
• Gives mild and delicate flavor of kefir  
• Provides low post-acidification |
**RYAZHENKA** – cultured dairy drink made from baked cow’s milk. The product has cream color and the flavor of baked milk. The product is fermented with Streptococcus thermophilus.

**HISTORY**
According to historians, ryazhenka was known in the XVII-th century. Initially, it was cooked in the oven. People filled clay jars with milk and put them into an oven. They didn’t let the milk boil fast – just to simmer and evaporate excess moisture, until it became beautifully cream. Then they added sour cream as a starter culture and left it in a warm place for a few hours.

**HEALTH PROPERTIES OF RYAZHENKA**
- Its proteins digest better than proteins from milk
- Contains Groups A, B, C and PP vitamins, essential minerals – macro- and microelements – and ¼ of daily value of calcium
- When used regularly, bio-ryazhenka can improve appetite and kidneys and digestive tract functions.
- Nutritionists recommend using ryazhenka to people with hypertension and other cardiovascular disorders, as well as to kids, pregnant women, nursing mothers, elderly people.

«SOYUZSNAB» GC OFFERS A RANGE OF GOLDEN LINE STARTER AND PROBIOTIC CULTURES FOR RYAZHENKA PRODUCTION
### GOLDEN LINE STARTER CULTURES

<table>
<thead>
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</table>
| «Golden Time» RZ 4.44 | *Streptococcus salivarius* ssp. *thermophilus* | - Medium viscosity and thick consistency  
- Moderate lactic acid taste and odor  
- Pronounced creamy flavor  
- Pronounced flavor of a simmered dairy product |
| «Golden Time» RZ 4.34 | *Streptococcus salivarius* ssp. *thermophilus* | - High viscosity and thick consistency  
- Moderate lactic acid taste and odor  
- Pronounced creamy flavor  
- Pronounced flavor of a simmered dairy product  
- Low post-acidification |
| «Profiline» RZ 4.01 T | *Streptococcus salivarius* ssp. *thermophilus* | - Medium viscosity and thick consistency  
- Moderate lactic acid taste and odor  
- Pronounced flavor of a simmered dairy product |
| «Profiline» RZ 4.50 LOW | *Streptococcus salivarius* ssp. *thermophilus* | - Provides high viscosity and thick consistency  
- Provides a stable consistency over a long shelf life (passed the tests for 30 days at 26-27 °C)  
- Provides low post-acidification |
**Yogurt**

**Yogurt** – is a cultured dairy product with high non-fat milk solids content, fermented with a composition of pure *Streptococcus thermophilus, Lactobacillus bulgaricus*.

**History**

There is a legend about the origin of yogurt: On the southern slope of Elbruss mountain, where temperatures can reach (40-45 °C). The temperature for these microorganisms present in the milk was favorable, and the milk fermented very quickly. The local people – Turcomans – called the product « yoghurut». According to some sources, the word appeared in the VIII-th century, and in the XI-th c. it changed to the modern word – «yogurt».

**Yogurt Benefits**

- Regular consumption of live yogurts normalizes gastrointestinal tract functions, restores its microbiota, improves absorption of minerals and vitamins, especially those of Group B
- It is proved, that lactic acid bacteria can influence metabolism of bile acids and amino acids, thus normalizing liver functions.

**“Soyuzsnab” GC Offers a Range of Golden Line Starter Cultures for Yogurt Production**

**Golden Line Starter Cultures**

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<thead>
<tr>
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</table>
| «Golden Time» Y0 22.44 | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus*, *Lactobacillus delbrueckii* ssp. *lactis* | - Low viscosity and thick consistency  
- Pronounced flavor of yogurt  
- Pronounced creamy flavor  
- Low post-acidification  
Ideal for spoonable yogurt, including set yogurt  
Accelerated fermentation process |
<table>
<thead>
<tr>
<th>STARTER CULTURE</th>
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</tr>
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</table>
| «Golden Time» YO 22.40 | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *Bulgarcus* | • Medium viscosity and thick consistency  
• Pronounced flavor of yogurt  
• Pronounced creamy flavor  
• Low post-acidification  
Ideal for drinking yogurt  
Accelerated fermentation process |
| «Profiline» YO 22.11 R2 | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus* | • High viscosity and thick consistency  
• Mild flavor of yogurt  
• Low post-acidification  
Ideal for drinking yogurt |
| «Profiline» YO 22.11 R5 | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus* | • Low viscosity and thick consistency  
• Pronounced refreshing flavor of yogurt  
• Low post-acidification  
Suitable for Greek-style yogurt |
| «Profiline» YO 22.50 LOW | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus* | • Thick and dense texture  
• Distinctive lactic acid taste and odor of yoghurt  
• Low post-acidification  
Suitable for spoonable set yogurt |
| «Profiline» YO 22.10 | *Streptococcus salivarius* ssp. *thermophilus*, *Lactobacillus delbrueckii* ssp. *bulgaricus* | • Provides low post-acidification in the finished product for a long shelf life at room conditions (passed the tests for 14 days at 26-27 °C)  
• Low post-acidification both in unsweetened yoghurts, and in yoghurts with sugar  
• Gives Medium viscosity and thick consistency  
• Pronounced flavor of yogurt |
Guaranteed quality of yogurt when packing at +25 C*

Stable quality of yogurt, including hot season and in case of irregular temperature regimes

Dense consistency without thickeners – «clean label»

Rich creamy taste – important for low-fat yogurts

No flaws of the product: syneresis, «sour taste», the product restores the structure excellently after the mechanical impact

Tested by Research and Development Laboratory of »Zelenye Linii» Ltd. on yogurts with the following parameters:

- mass fraction of fat 1.5%, mass fraction of protein 3%, mass fraction of sugar 7%

On the 30th days of shelf life at +25 C the titratable acidity of yogurt is:

- on popular european starter cultures – 3.3 pH
- on starter culture Golden Line LbS 22.50 LOW – 3.9 pH

*Sanitary-hygienic standards must be observed by the manufacturer
**SOUR CREAM**

**HISTORY**
Sour cream is a dairy product produced by cream ripening with use of lactococcus or mixture of lactococcus and thermophilic lactic acid streptococci.

**HEALTH PROPERTIES OF SOUR CREAM**
- Is a source of vitamin B, E, C and PP
- A great alternative to sauce for different dishes.

**“SOYUZSNAB” GC OFFERS A RANGE OF GOLDEN LINE STARTER CULTURES FOR SOUR CREAM PRODUCTION**

**GOLDEN LINE STARTER CULTURES**

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<thead>
<tr>
<th>STARTER CULTURE</th>
<th>MICROBIOTA CONTENT CHARACTERISTICS</th>
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</tr>
</thead>
</table>
| «Golden Time» SC 30.55 | Streptococcus salivarius ssp. thermophilus, Lactococcus lactis subsp. lactis, Lactococcus lactis subsp. cremoris | • High viscosity and thick consistency even in low-fat product  
• Moderate lactic acid taste and odor with a bright creamy note |
| «Golden Time» SC 30.60 | Lactococcus lactis subsp. lactis biovar dyacetilactis, Lactococcus lactis, Leuconostoc mesenteroides ssp mesenteroides, Streptococcus salivarius ssp. thermophilus | • Dense structure and a fairly thick consistency  
• Distinctive creamy flavor |
Non-dairy yogurt – yogurt made from fermented oat, rice, almond, coconut milk.

Non-dairy yogurt is also a good source of fiber, protein, and calcium, and may even aid in blood sugar regulation.

<table>
<thead>
<tr>
<th>STARTER CULTURE</th>
<th>MICROBIOTA CONTENT CHARACTERISTICS</th>
<th>CHARACTERISTICS OF THE FINISHED PRODUCT</th>
</tr>
</thead>
</table>
| «Golden Time» YO 22.50 | *Streptococcus salivarius* ssp. thermophilus, *Lactobacillus delbrueckii* ssp. bulgaricus, *Lactobacillus delbrueckii* ssp. lactis | • Thick and dense texture  
• Distinctive lactic acid taste of yogurt  
• Low post-acidification  
**Ideal for non-dairy yogurt, based on oat, rice, almond, coconut milk** |
Kombucha

Kombucha is a fermented beverage consisting of black tea and sugar (from various sources, including cane sugar, fruit or honey) that’s used as a functional, probiotic food. It contains a colony of bacteria and yeast that are responsible for initiating the fermentation process once combined with sugar.

<table>
<thead>
<tr>
<th>STARTER CULTURE</th>
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<th>CHARACTERISTICS OF THE FINISHED PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>«Profiline» DR 45.05</td>
<td><em>Lactobacillus plantarum, Saccharomyces cerevisiae</em></td>
<td>• Due to mixed fermentation provides the taste like Kombucha in tea-based drinks</td>
</tr>
</tbody>
</table>
KIND OF COTTAGE CHEESE
This healthy product cannot be substituted by any other if we mean a balanced diet. This tender, a bit sourish dairy product has been extremely popular in Russia for centuries, because it is a tasty, nutritious dish by itself and an essential ingredient of many dishes.

HISTORY
The time and place of origin of tvarog and cottage cheese are not known. But, according to the records made by Roman philosophers and writers, Ancient Romans could make this product. The Romans ate plain tvarog and cottage cheese, or combined it with honey, milk and even with wine.

HEALTHY BENEFITS OF TVAROG

• Tvarog is a nutrient rich product, with a high concentration of useful microelements, mineral, amino-acids, protein and lactose.
• It is rich in phosphorus, magnesium, sodium, iron and calcium, vitamins PP, B1 and B2, A, C.
• Tvarog contains milk protein (casein), which substitutes animal proteins. 300 grams of cottage cheese provide a daily value of protein.
• Tvarog is recommended for dietary nutrition and sports diets.
• Tvarog is used in baby food, because it is an essential product for proper formation of kids’ skeletal system and teeth growth.
• It is a useful product in therapeutic diets in case of kidneys, liver, digestive tract, lung and cardiovascular system disorders.

«SOYUZSNAB» GC OFFERS A RANGE OF GOLDEN LINE STARTER CULTURES FOR TVAROG AND COTTAGE CHEESE PRODUCTION
<table>
<thead>
<tr>
<th>STARTER CULTURE</th>
<th>MICROBIOTA CONTENT</th>
<th>CHARACTERISTICS OF THE FINISHED PRODUCT</th>
</tr>
</thead>
</table>
• Creates a distinctive dairy taste and flavor of a traditional product profile |
| «Golden Time» TW 20.12 FS  
• Enables to achieve big grains after boiling the curd  
• Ensures easy whey separation |
| «Profiline» TW 20.11 T  
• After boiling, gives elastic crumbly texture of the curd  
• Provides floating curd due to the presence of gas-forming microorganisms |
| «Profiline» TW 30.01 ET  
«Profiline» TW 30.02 ET | *Streptococcus salivarius* ssp. *thermophilus*, *Lactococcus lactis* subsp. *cremoris*, *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *lactis* biovar *diacetylactis* | • Provides dense, smooth structure, friable texture of tvarog;  
• Results into rich, creamy dairy taste and aroma, which are typical for traditional taste profile of quark |
| «Profiline» TW 20.01 ET  
«Profiline» TW 20.02 E | *Lactococcus lactis* subsp. *cremoris*, *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *lactis* biovar *diacetylactis* | • Provides short structure and soft texture of tvarog;  
• Results into rich dairy taste and aroma, which are typical for traditional taste profile of tvarog |
| «Golden Time» TW 20.11 TS | *Streptococcus salivarius* ssp. *thermophilus*, *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *cremoris*, *Lactococcus lactis* subsp. *lactis* biovar *diacetylactis*, *Leuconostoc mesenteroides* ssp. *mesenteroides* | • Provides a dense texture of tvarog (with minimal loss of protein during cutting and boiling);  
• Ensures easy whey separation  
• Gives elastic crumbly texture of the curd  
• Gives a creamy flavor of cultured dairy products |
Low-Lactose and Lactose-Free Dairy Products

Unique starter culture «Smartline» M 4.01 SWEET is an opportunity to produce 100% highly profitable low-lactose and lactose-free dairy products!

GOLDEN LINE «Smartline» M 4.01 SWEET Starter Culture for Preparation of lactose-free dairy products without the use of additional equipment for milk ultrafiltration and enzyme preparations

Saves the production time of lactose-free dairy products due to exclusion of the hydrolysis stage before the fermentation process

Eliminates the risk of premature microbiological spoilage

Doesn’t require additional labeling, which eliminates any questions about product composition

Provides significant economical benefits

Additional Benefits:

- Improves taste of traditional fermented milk products (sour cream, yogurt, ryazhenka), giving them a pleasant sweet note without addition of sugar.

- Eliminates excessively sour taste during storage of a fermented milk product.
**Composition:** Streptococcus salivarius ssp. Thermophilus

**Total cell concentration:** not less than $1 \times 10^{10}$ CFU/g.

**Starter Culture Golden Line «Smartline» M 4.011 SWEET properties:**
- Obtained by selection from litchi fruit from the southern province of China, not a GMM.
- Has a natural hyper-galactoside activity for milk lactose, hydrolyzing it to glucose and galactose by 100%.
- Does not invoke further increase in acidity during storage.
- Can be used as a separate culture or in conjunction with other starter cultures.
- As a separate starter culture it provides dairy products with a thick, viscous structure and a moderate fermented taste.

**Golden Line «Smartline» M 4.01 SWEET Starter Culture fermentation conditions for lactose-free and low-lactose products based on milk with 4.6-4.7% lactose weight ratio**

<table>
<thead>
<tr>
<th>Fermentation conditions of milk with 4.6-4.7% of initial lactose content with up to pH 4.5-4.55</th>
<th>Possible Application</th>
<th>Lactose mass fraction, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Right after the fermentation</td>
</tr>
<tr>
<td>As a separate culture</td>
<td>With the main starter culture</td>
<td></td>
</tr>
<tr>
<td>25-26°C</td>
<td>15-16 hrs</td>
<td>no</td>
</tr>
<tr>
<td>30-32°C</td>
<td>10-12 hrs</td>
<td>no</td>
</tr>
<tr>
<td>34-36°C</td>
<td>7-8 hrs</td>
<td>X</td>
</tr>
<tr>
<td>38-40°C</td>
<td>5-6 hrs</td>
<td>X</td>
</tr>
<tr>
<td>42-44°C</td>
<td>4.5-5.5 hrs</td>
<td>X</td>
</tr>
</tbody>
</table>

**Golden Line «Smartline» M 4.01 SWEET Starter Culture fermentation conditions for low-lactose products based on milk with 6% lactose weight ratio**

<table>
<thead>
<tr>
<th>Fermentation conditions of milk with 6% of initial lactose content with up to pH 4.5-4.55</th>
<th>Possible Application</th>
<th>Lactose mass fraction, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Right after the fermentation</td>
</tr>
<tr>
<td>As a separate culture</td>
<td>With the main starter culture</td>
<td></td>
</tr>
<tr>
<td>34-36°C</td>
<td>6.5-8 hrs</td>
<td>X</td>
</tr>
<tr>
<td>40-42°C</td>
<td>5.5-7.5 hrs</td>
<td>X</td>
</tr>
</tbody>
</table>
Brine-ripened cheeses

MOZZARELLA
Mozzarella — famous Italian cheese, praised by gastrologists around the world. This cheese is very popular not just due to its delicate flavor and pleasant aroma but also due to a large number of dishes that can be prepared from this cheese. It is impossible to imagine a pizza, a caprese salad, a lasagna and a variety of pastas without mozzarella.

Historically mozzarella has been known since XII-th century. At that time it was made in San-Lorenzo monastery. According to ancient recipe implies usage of black buffalo fresh milk. Nowadays several kinds of this cheese exist.

CHECHIL CHEESE
The most popular brine-ripened cheese in Russia — is Chechil cheese. Its history rooted back in ancient time in Caucasus. Its name derives from Caucasian word «Chechil». What means tangled (fibrous). Back then it was only handmade by pulling thin threads. Chechil cheese may have different forms – long thin threads, fibrous balls, plaited cheese, small balls.

Chechil cheese may also be smoked, which gives the product the unique smoky taste and allows to prolong its shelf life significantly. Once tasted, chechil cheese is hard to resist.

Outstanding peculiarity of Chechil production are cheddaring and melting of cheese mass, as well as the ripening of cheese in the salt brine. Which gives the product a specific fibrous structure and a bit of a spicy taste.
«SOYUZSNAB» GC OFFERS A RANGE OF GOLDEN LINE STARTER CULTURES FOR CHEESE PRODUCTION

GOLDEN LINE STARTER CULTURES

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<th>MICROBIOTA CONTENT</th>
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</thead>
<tbody>
<tr>
<td>«Golden Time» CH 4.05</td>
<td><em>Streptococcus salivarius</em> ssp. <em>Thermophilus,</em> <em>Lactobacillus helveticus</em></td>
<td>• Good whey separation during cheese production, intense fermentation process.</td>
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<tr>
<td></td>
<td></td>
<td>• Cheese paste consistency is plastic, layered. The structure is soft and elastic.</td>
</tr>
<tr>
<td>«Golden Time» CH 4.04 M</td>
<td><em>Streptococcus salivarius</em> ssp. <em>Thermophilus</em></td>
<td>• Shortened cheddaring 1-2 hours. Ideal for mozzarella and other cheeses with cheddaring.</td>
</tr>
<tr>
<td>«Profiline» CH 4.01 M</td>
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</tbody>
</table>
Sensible nutrition is one of the key factors to determine harmonious growth, development, maintenance of health and human immunity to the action of infection and various environmental concerns. Nutrition plays an important role in children's health and it is important to place emphasis on the consumption of dairy and dairy based products in one's diet. Inclusion of these foods in the diet provide healthy bacteria. The addition of these foods provides the body with additional high quality protein, fat, calcium, vitamin B2 and other nutrients.

Probiotic cultures Golden Line passed placebo controlled trials involving groups of healthy volunteers in a study conducted by the Russian Medical University National Research University of N.I. Pirogov.

You can review the results and clinical studies of probiotic cultures Golden Line in the scientific publication, «Technics and Technology of food production,» ed. №1 (32) 2014, p. 126, «Influence of receiving probiotic bacteria of Lactobacillus and Bifidobacterium on the composition of the intestinal microflora of healthy individuals.» Probiotic cultures Golden Line entirely consist of microorganisms, that are specific to the human organism. They have strong antagonistic properties against opportunistic pathogenic intestinal microflora, high resistance to aggressive conditions of the gastrointestinal tract, excellent adhesive properties to the cells of the intestinal epithelium, and do not have active acid-forming properties (which is a basic requirement for children’s nutrition of fermented milk product). Bifidobacteria and lactobacilli do not have a pathogenicity factor at all. Probiotic cultures Golden Line provide a high degree of CFU in 1g of fermented milk product, even at the end of shelf life.
Regular consumption of fermented milk products with probiotic cultures Golden Line leads to quantitative changes in the intestinal microflora of children: increases the number of Bacteroides, anaerobic gram-positive and gram-negative symbiotes, non-pathogenic colon bacterium. The positive changes identified in the «useful» (probiotic) Flora – a significant increase in the number of intestinal lactobacilli. Therefore, regular consumption of fermented milk products with probiotic cultures Golden Line contributes to the rapid formation of a correct microflora in infants, normalization of microflora with the existing imbalance that children and adults have leads to the strengthening of immunity in general.

### THE RANGE OF PROBIOTIC CULTURES GOLDEN LINE FOR THE PRODUCTION OF FERMENTED MILK PRODUCTS

<table>
<thead>
<tr>
<th>NAME OF THE CULTURE</th>
<th>COMPOSITION OF THE MICROFLORA</th>
<th>MAIN CHARACTERISTICS OF THE FINISHED PRODUCT</th>
<th>TARGET APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>«Probiline» PR 6.10</td>
<td>Bifidobacterium bifidum, Bifidobacterium animalis ssp. lactis, Bifidobacterium longum ssp. longum</td>
<td>• Possess a high level of antagonistic activity against pathogenic and opportunistic pathogenic microorganisms;</td>
<td>For the products intended for the prevention of disbacteriosis (intestine)</td>
</tr>
<tr>
<td>«Probiline» PR 3.10</td>
<td>Lactobacillus paracasei ssp. Paracasei</td>
<td>• Have the ability to survive in the gastro-intestinal tract (resistance to bile acids, NaCl, acidic and alkaline medium reaction);</td>
<td>For the products of general prophylactic (for the entire digestive tract)</td>
</tr>
<tr>
<td>«Probiline» PR 3.20</td>
<td>Lactobacillus acidophilus</td>
<td>• Possess a high degree of adhesion to the cells of the intestinal epithelium.</td>
<td>For the products made for maintaining women’s health</td>
</tr>
<tr>
<td>«Probiline» PR 3.30</td>
<td>Lactobacillus plantarum</td>
<td></td>
<td>For the products of local prophylactic (stomach, mouth cavity)</td>
</tr>
<tr>
<td>«Probiline» PR 3.30 R</td>
<td>Lactobacillus rhamnosus</td>
<td></td>
<td>For the products of general prophylactic for baby food (for the entire digestive tract)</td>
</tr>
<tr>
<td>«Probiline» PR 6.10 MIX</td>
<td>Bifidobacterium bifidum, Bifidobacterium animalis ssp. lactis, Bifidobacterium longum ssp. longum, Lactobacillus plantarum, Lactobacillus acidophilus, Lactobacillus paracasei ssp. paracasei, Lactobacillus rhamnosus</td>
<td></td>
<td>For the products of comprehensive prophylactic</td>
</tr>
</tbody>
</table>
PROTECTIVE CULTURES

To manage the shelf life of dairy products without using preserving agents is a task which is the main goal from experts of the Scientific Production Association «Green Lines» (Group of companies «SOYUZSNAB») in the development of protective cultures Golden Line.

The popularity of the protective cultures Golden Line among the manufacturers of dairy products are growing every year. This explains why manufacturers are interested in developing new dairy products with a longer shelf life of 30 days or more. Taking into account the objective, the duration of transportation and failure of temperature conditions within retail locations, it is not always possible to ensure the microbiologic safety of the product for such a long period. Safety of the cultures Golden Line are a modern and completely safe solution to these problems. They are the alternative biological means of protection of dairy products and cheeses from the development of undesirable microorganisms. Talking about unwanted microflora, we mean not only sanitary indicator microorganisms that must not be detected in a certain amount of the product according to regulatory documents, but also technically harmful microflora, which is not normalized in the product, but is dangerous to the product itself (spore-forming, putrid microorganisms) as causes faults of organoleptic properties and structure.

THE RANGE OF PROTECTIVE CULTURES GOLDEN LINE
FOR THE PRODUCTION OF FERMENTED MILK PRODUCTS

<table>
<thead>
<tr>
<th>PROTECTIVE CULTURE</th>
<th>COMPOSITION OF THE MICRO-FLORA</th>
<th>TYPE OF FINISHED PRODUCTS</th>
<th>MAIN CHARACTERISTICS</th>
</tr>
</thead>
</table>
| «Profiline» PC 3.01 | *Lactobacillus plantarum*     | Fermented milk products, cheeses | • Increases the safety and / or extends the shelf life of fermented milk products and cheeses due to expressed antagonistic properties towards undesirable microflora;  
• Particularly active against yeast and molds, coli – forms;  
• It has a salt tolerance that allows to use it in the production of granulated cottage cheese;  
• It has cold tolerance that allows to ensure the antagonistic effect as long as possible towards sanitary indicator microorganisms even in a refrigerator compartment. |
<table>
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</tr>
</thead>
</table>
| «Profiline» PC 3.02 | Lactobacillus casei           | Fermented milk products, cheeses | • Increases the safety and/or extends the shelf life of fermented milk products and cheeses due to expressed antagonistic properties towards undesirable microflora;  
• Particularly active against yeast coliforms and S. aureus;  
• It has a salt tolerance that allows to use it in the production of granulated cottage cheese;  
• It has cold tolerance that allows to ensure the antagonistic effect as long as possible towards sanitary indicator microorganisms even in a refrigerator compartment. |
| «Profiline» PC 27.50 | Lactobacillus rhamnosus, Lactococcus lactis ssp. lactis, Propionibacterium freudenreichii | Fermented milk products, cheeses | • Increases the safety and/or extends the shelf life of fermented milk products and cheeses due to expressed antagonistic properties towards undesirable microflora;  
• Has the high capacity for producing nisin at initial stages of fermentation  
• Has especially high resistance to yeast, mold, E.coli, S.aureus  
• It has a salt tolerance that allows to use it in the production of granulated cottage cheese;  
• It has cold tolerance that allows to ensure the antagonistic effect as long as possible towards sanitary indicator microorganisms even in a refrigerator compartment. |
| «Profiline» PC 22.11 HD | Lactobacillus delbrueckii ssp. lactis, Lactobacillus helveticus | Cheeses | • Shows antagonistic properties towards coliforms, prevents cheese from the «early blowing»;  
• Active towards butyric-acid bacterium, reduces the probability of «late blowing» of cheeses;  
• It has a salt tolerance that allows to apply it successfully in the production of cheese and granulated cottage cheese;  
• It has cold that allows to ensure the antagonistic effect as long as possible towards sanitary indicator microorganisms even in a ripening room;  
• Reduces the duration of cheeses ripening. |
Golden Line series
1.50 cultured dextrose -
the natural preservative
for dairy products

Preservatives are food additives which increase the shelf life of products, protecting them against deterioration caused by micro-organisms (bacteria, yeast or mold).

All preservatives used in food industry are regulated by very strict requirements. They should have a detrimental effect on microorganisms but be harmless to humans, i.e. should not form toxic compounds after decomposition and should not affect product’s organoleptic characteristics.

During the development of a natural preservative all these requirements are taken into account by the GC «Soyuzsnab» experts.

**GOLDEN LINE SERIES 1.50 CULTURED DEXTROSE** is a natural product of propionic acid bacteria fermentation, which produce propionic acid and bacteriocins.

These elements are active against yeasts, molds, lactic acid microorganisms and listeria and them being present in the product does not depend on the technological production process. To avoid affecting the fermentation starter microflora development Golden Line series 1.50 cultured dextrose should be added to the product after the fermentation process is finished.
GOLDEN LINE SERIES 1.50 CULTURED DEXTROSE:

– Is a natural product without «E» numbers
– Protects dairy products against unwanted microbial flora development
– Prevents the acidity growth caused by the development of lactic acid microorganisms in a finished product during storage
– Is thermostable

<table>
<thead>
<tr>
<th>NAME</th>
<th>COMPOSITION</th>
<th>ACTIVE COMPONENTS</th>
<th>MICROFLORA</th>
<th>FORM</th>
<th>DOSAGE</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50 Cultured Dextrose</td>
<td>Cultured Dextrose, maltodextrine</td>
<td>Sodium propionate, bacteriocins (≈5%)</td>
<td>Propionibacterium freudenreichii</td>
<td>Powder</td>
<td>0.1-0.15%</td>
<td>Yogurt, Sour Cream, cultured drinks, Cottage cheese (addition after draining the whey)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.1-0.25%</td>
<td>Cottage cheese with boiling (adding at the end of boiling, 30 minutes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2-1.0%</td>
<td>Mayonnaise, mayonnaise sauces, ketchups, tomato sauces, sauces, spreads</td>
</tr>
</tbody>
</table>
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