DAIRY APPLICATION
Introduction
Cardiovascular disease is the global leading cause of death. Most cardiovascular risk factors can be prevented with lifestyle and dietary changes\(^1\). High blood pressure is a major public health issue and the single biggest risk factor for stroke, it also plays a significant role in heart health. Numerous clinical trials have shown that lowering blood pressure reduces the risk of myocardial infarction by 20% - 25%, of stroke by 35%-40% and of heart failure by 50%\(^2\). Abnormal blood lipid levels, that is high total cholesterol, triglycerides and low-density lipoprotein (LDL), or low levels of high-density lipoprotein (HDL) cholesterol, increase the risk of heart disease and stroke. Excess cholesterol builds up, and may eventually clog the arteries. The European Society of Cardiology states that a reduction of both LDL cholesterol and blood pressure ‘largely eliminates’ the lifetime risk of cardiovascular disease up to 90%\(^3\).

Strain characterisation
LPLDL\(^\circledR\) is a naturally-occurring strain of the bacterial species Lactobacillus plantarum. Lactobacilli are common components of the human intestinal microbiome and have traditionally been used as probiotics\(^4\). Lactobacillus plantarumLPLDL\(^\circledR\) was selected using OptiBiotix’s OptiScreen\(^\circledR\) proprietary technology platform from a collection of over 4,000 microbial candidates, for its superior capacity to hydrolyse bile salts. This activity is crucial for bacterial survival in the small intestine and mediates LPLDL\(^\circledR\)’s mechanism of action (References: (1) Salminen et al., 1998).

Evaluation of metabolic activity with bile salts
Bacterial cells from cultures grown for 17 hours were harvested, standardised and re-suspended in PBS buffer containing varying concentrations of bile salts. Cell viability was evaluated after 3 hours of incubation at 37\(^\circ\). LPLDL\(^\circledR\) shows an outstanding resistance to exposure to bile salts (0.0%, 0.3%, 0.5%, 1.0%, 2.0% concentrations of bile salts in the culture medium).

Human study
An independent, double-blind, randomised, placebo-controlled human study with LPLDL\(^\circledR\) was performed at the University of Reading (United Kingdom).

Results

<table>
<thead>
<tr>
<th>Market</th>
<th>Effect</th>
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<tbody>
<tr>
<td>LDL cholesterol</td>
<td>13.9%</td>
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<tr>
<td>HDL cholesterol</td>
<td>4.8%</td>
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<tr>
<td>Total TAG</td>
<td>53.9%</td>
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<tr>
<td>Systolic Blood Pressure</td>
<td>5.1%</td>
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Subjects with hypercholesteremia, Age range of study population 30/65, Daily dose 46 cfu of LPLDL\(^\circledR\) or placebo, 4 weeks wash-out period, 12 weeks treatment period, 30/65 Age range of study population, 4x10\(^9\) cfu of LPLDL\(^\circledR\) per dose, 1x10\(^9\) cfu of LPLDL\(^\circledR\) per dose.

Published on PLos One, Costabile et al. (2017). Please note that whilst many of these figures show strong statistical significance, some are based on subgroups with small numbers and may require further studies in larger cohorts for substantiation.

Application
Specific for functional products:
- yogurt
- cream cheese
- soft cheese
- semi hard cheese
- food supplements

LPLDL\(^\circledR\) PRESERVES THE ORIGINAL PRODUCT TASTE AND FLAVOUR.
Sacco is “supporting food culture and life” and OptiBiotix is one of our partners to achieve this goal.

For further information please contact us at info@saccosystem.com