

# Impact of Lactobacillus plantarum LP<sub>LDL</sub><sup>®</sup> intake on cardiometabolic health biomarkers in human intervention studies

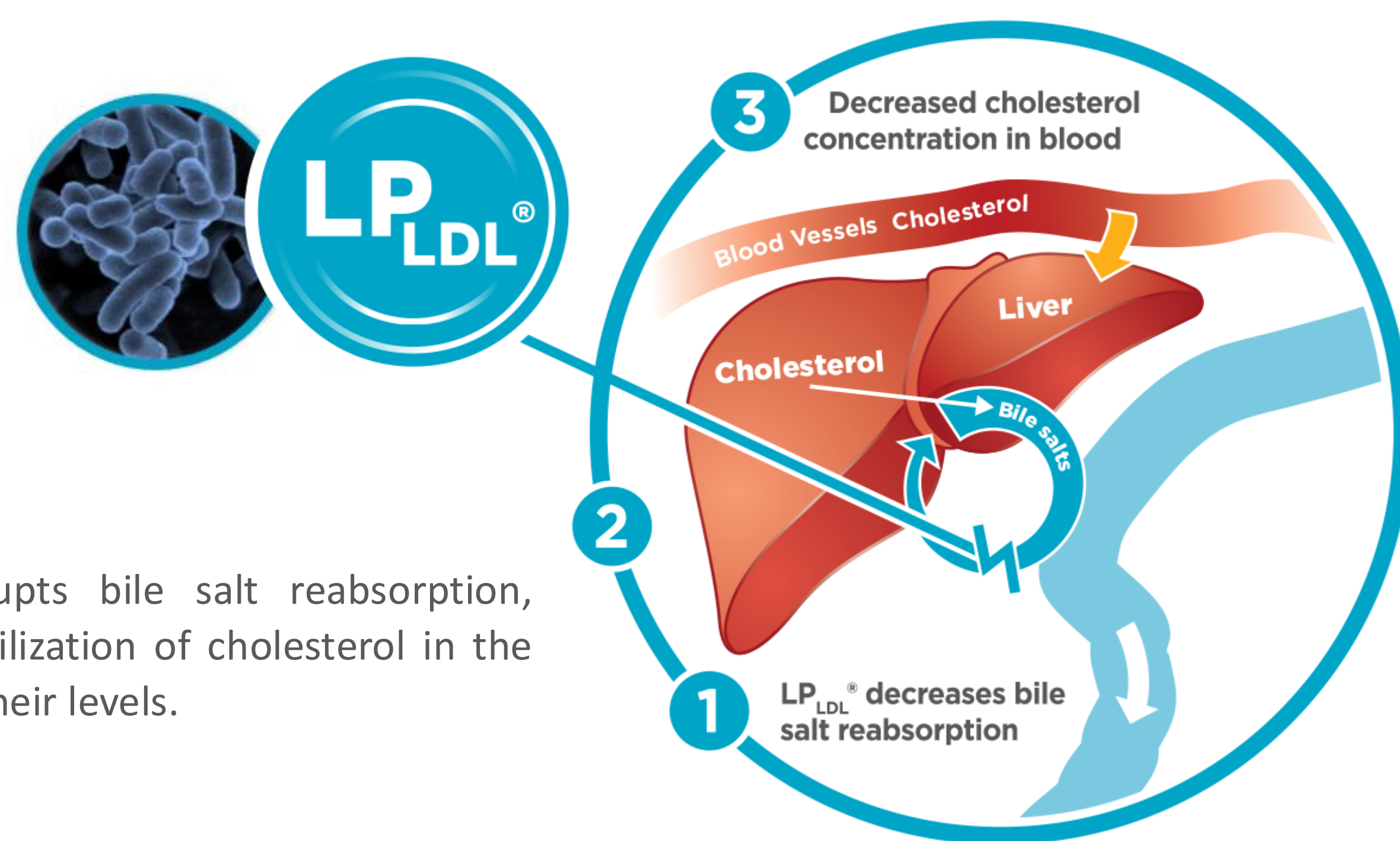
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## Background

Coronary heart disease (CHD), the most common type of cardiovascular disease (CVD), is responsible for 16% of the world's total deaths.

Epidemiological studies have suggested a positive correlation between elevated total serum cholesterol levels and CHD risk. They have established a causal role for LDL-C and other apoB containing lipoproteins in CHD development<sup>1</sup>.

## Lactobacillus plantarum LP<sub>LDL</sub><sup>®</sup> mechanism of action



BSH activity disrupts bile salt reabsorption, resulting in the utilization of cholesterol in the liver to replenish their levels.

## Aims

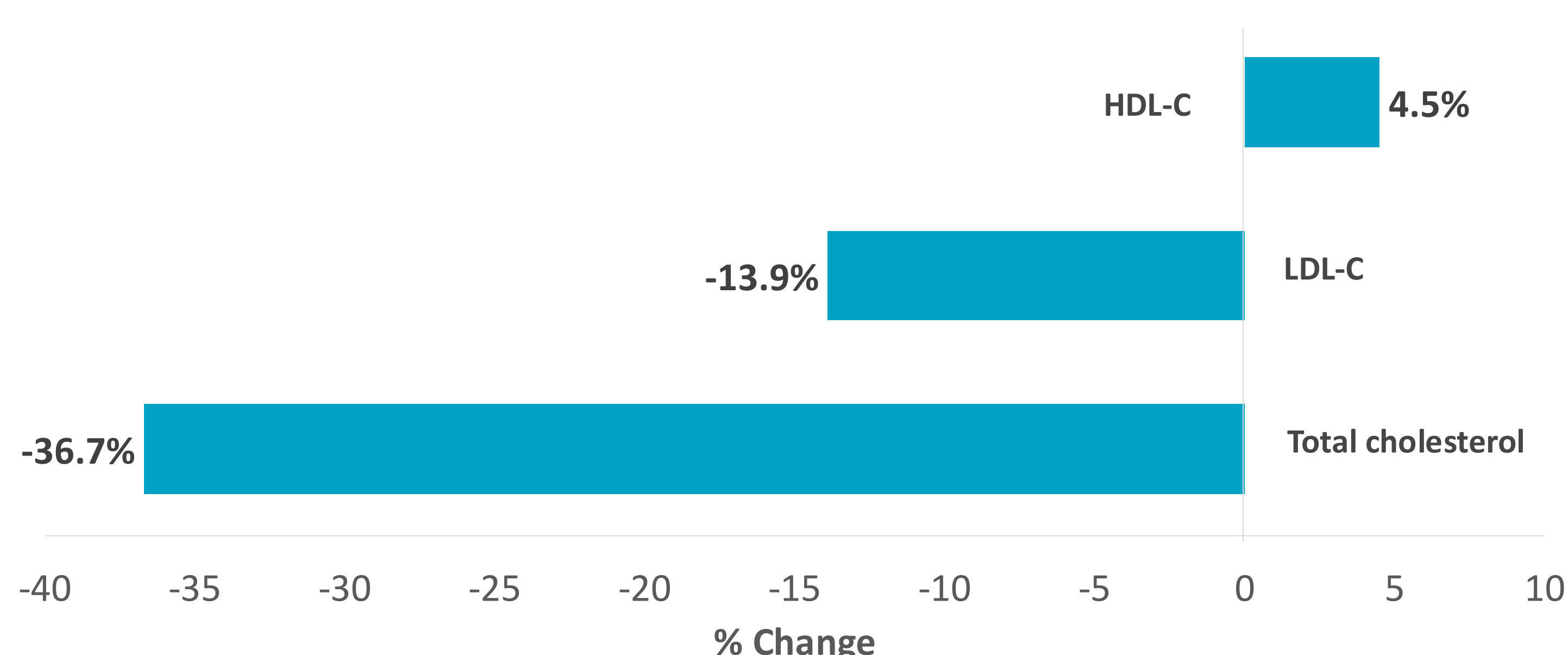
Investigate the cholesterol reducing activity of LP<sub>LDL</sub><sup>®</sup> in normal and hypercholesterolaemic adults in human intervention and consumer studies.

## Methods

- I. 12-week double-blind, placebo - controlled, parallel, randomized study in 46 adults (baseline TC ≥200mg/dl; University of Reading REC (UREC 15/06) taking 4x10<sup>9</sup> cfu/day encapsulated LP<sub>LDL</sub><sup>®</sup>
- II. Retrospective study in 434 adults in primary prevention (baseline TC 115-160 mg/dl), taking 4x10<sup>9</sup> cfu/day LP<sub>LDL</sub><sup>®</sup> and 2.9mg/day red yeast rice 3 to 6 months prior to enrolment:
  - Statin intolerant group (n=80)
  - Mild-moderate CVD risk group (n=207)
  - Active lifestyle group (n=74)
  - Aged < 40 years with predisposing factors group (n=32)
  - Peri-menopausal women group (n=40)

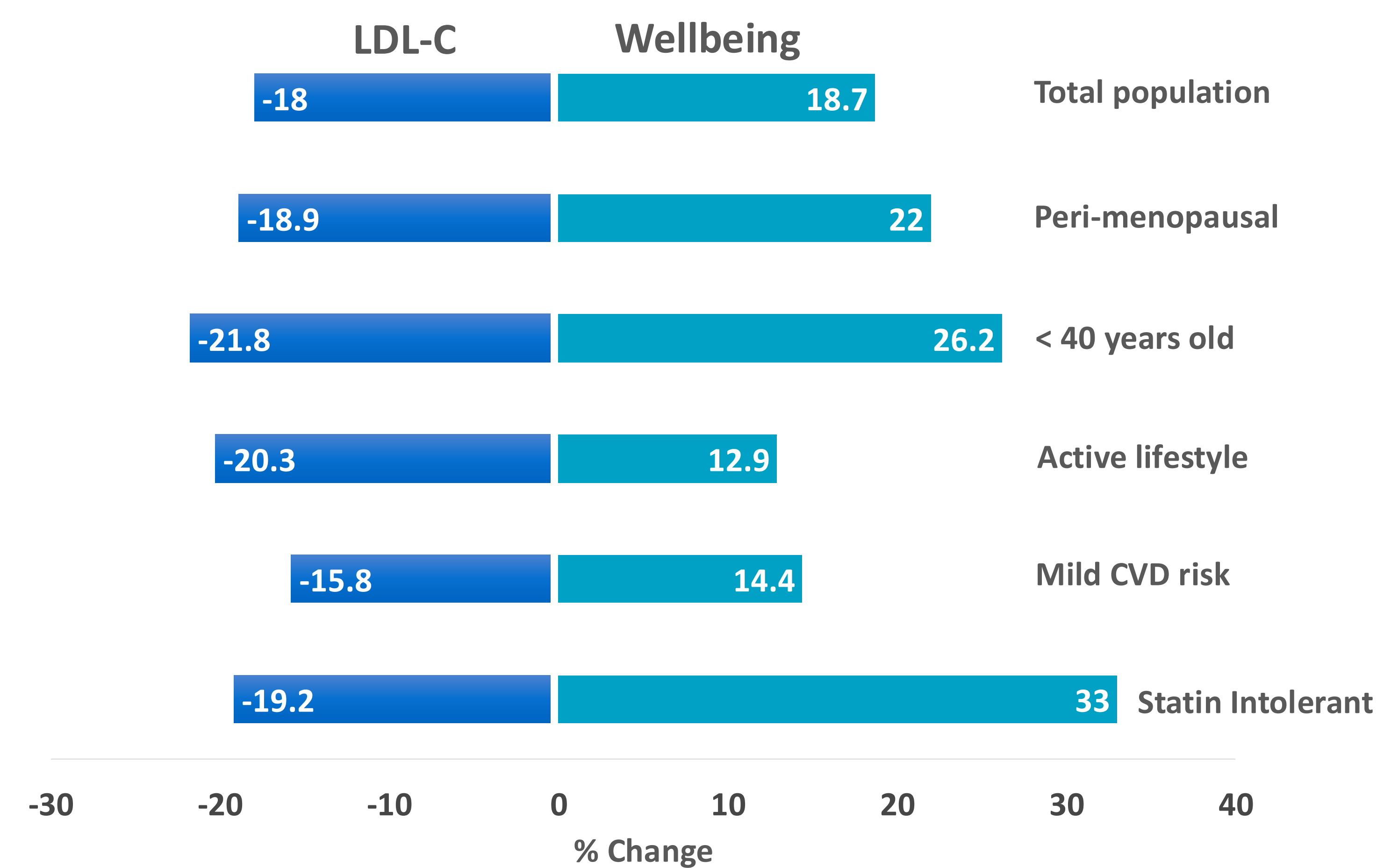
## Results

### I. Impact of LP<sub>LDL</sub><sup>®</sup> intake in normal to mildly hypercholesterolaemic adults<sup>2</sup>

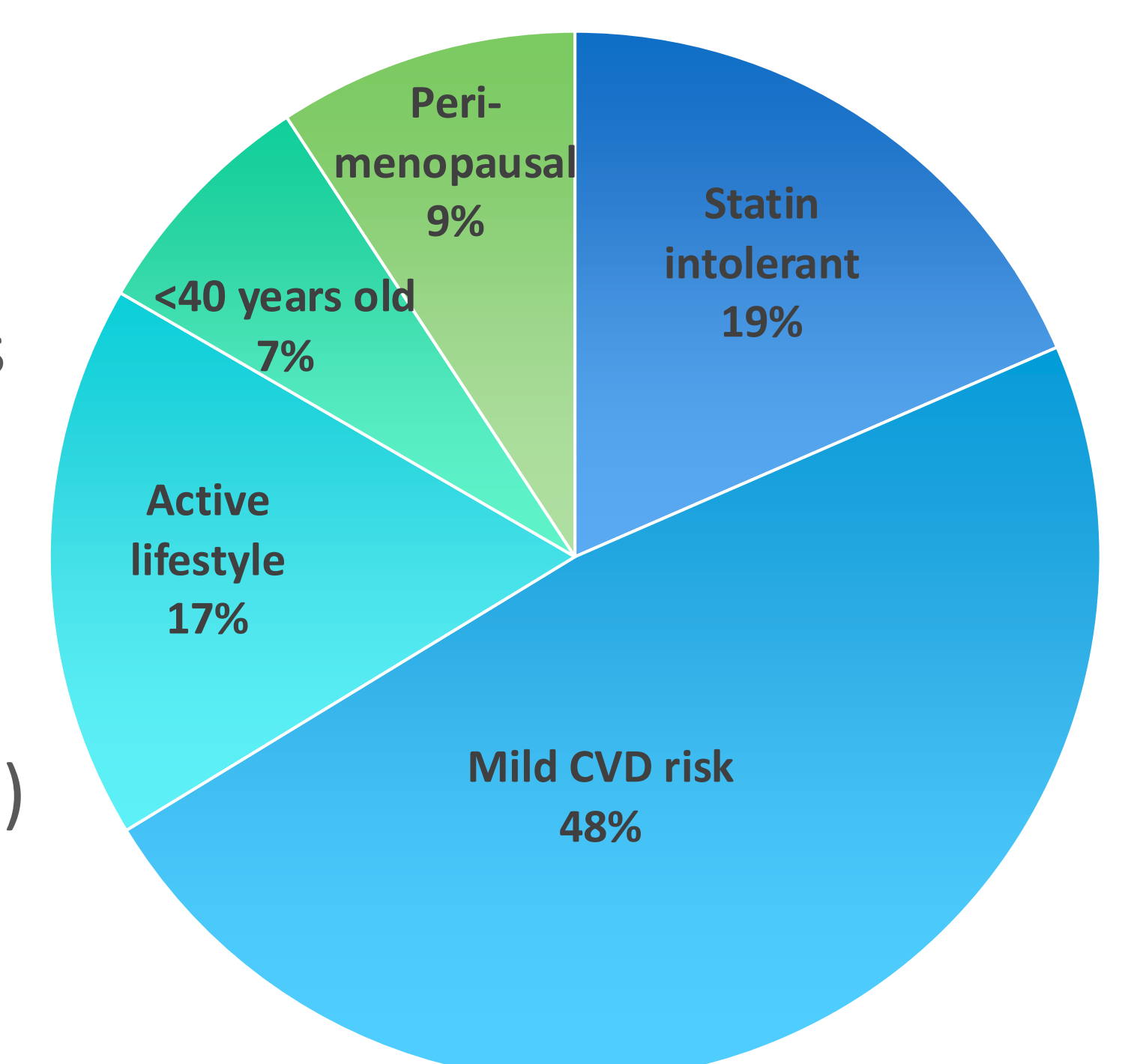


- Statistically significantly lowered LDL-C by 13.9% (P=0.03) and TC by 36.7% (P=0.045)
- No side effects observed

### II. Impact of LP<sub>LDL</sub><sup>®</sup> intake on LDL-C and perceived wellbeing in 434 adults in primary prevention<sup>3</sup>



### Study population distribution (n=434)



Statistically significant and clinically relevant improvements in all study groups & total population in:

- LDL-C (P<0.001)
- Perceived wellbeing (P<0.001)

## Conclusions

Daily intake of LP<sub>LDL</sub><sup>®</sup> is an effective, safe and a well tolerated approach for improving blood lipid profiles in adults in primary prevention.

## Study highlights

Daily intake of LP<sub>LDL</sub><sup>®</sup> supports statistically significant and clinically relevant improvements both in human intervention studies and in the wild in:

- Total cholesterol
- LDL-cholesterol
- Perceived wellbeing



### Acknowledgments:

We thank Professor Arrigo Cicero and the Department of Medical and Surgical Sciences, University of Bologna, Italy and ALFASIGMA for their contribution in the consumer study

**References:** <sup>1</sup>Ference et al (2017) Eur. Heart J. 38(32),2459–2472 | <sup>2</sup>Costabile et al (2017) PLoS ONE. 12(12): e0187964 | <sup>3</sup>Cicero (2023) Pharnutrition and Functional Foods. ISSN 2499-7196 |