



 **BASF**

We create chemistry

Plant-Based Support for Heart Health: **Plant Sterols in focus**

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Vitafoods Insights Webinar
Dec 7, 2021

Speakers



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Agenda

- 1| Plant-based market developments and holistic health trends
- 2| Why plant sterols for heart health?
- 3| Innovating with plant sterols
- 4| Market activity and inspirational ideas from the BASF portfolio

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Consumers gravitate to plant-based solutions amidst the pandemic

Plant-based Protein Market
14% CAGR (2019-2025)

Estimated 40.6 billion USD value by 2025



Meat analogues



Dairy Alternatives



Seafood Substitutes



Cell-based Meats

25% of British millennials say that COVID-19 has made plant-based diets more appealing

50% of Brits believe plant-based ingredients can have medicinal effects

Sources: Roquette Presentation 2021, Mintel 2021

The Plant-Based market is a journey, continuously evolving

In the beginning...

...Today



Plant-Based Diets

- Dairy free
- Meat free
- Vegetarian/vegan



Plant-Based Proteins

- Plant-based proteins sources
- Meat alternatives



Plant-Based Health Halo+

- Fortified foods
- Functional foods
- Specific health benefits

Sustainability, ethical and cultural drivers

Health driver



The health-conscious consumer finds security in plant-based products, a natural home for functional ingredients



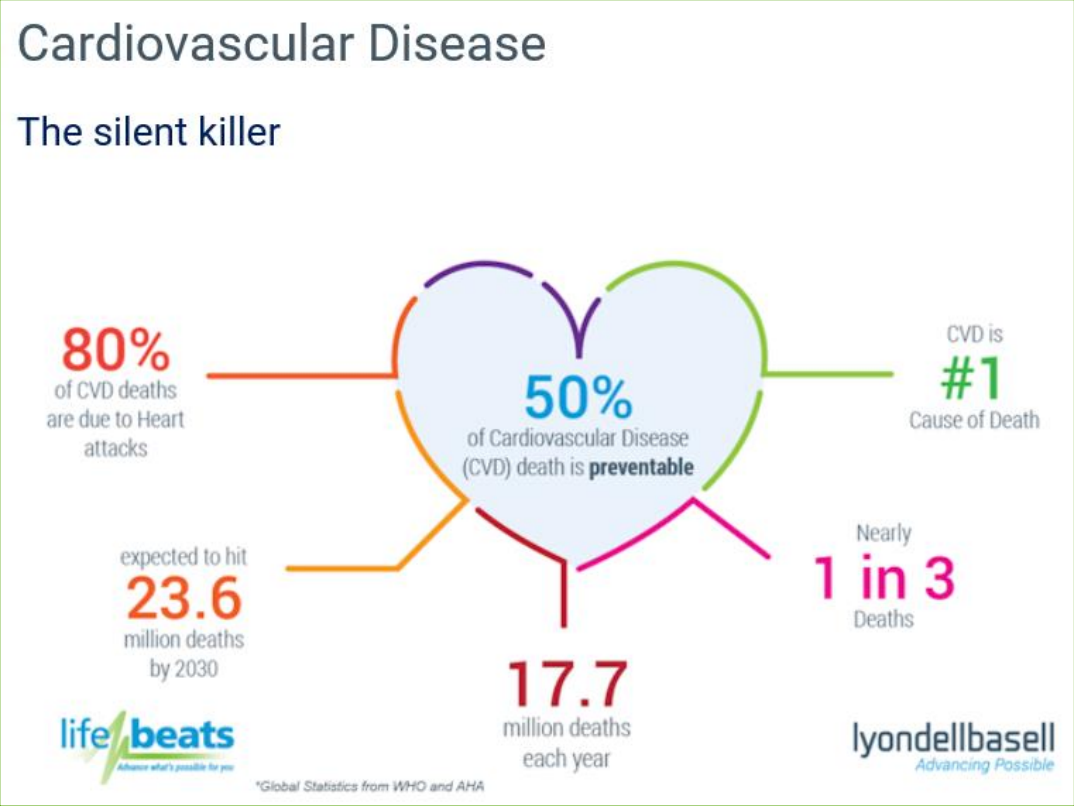
Health is the main driver for Plant-based choices of consumers today.

Plant-based products are a natural home for functional ingredients.

Boost the healthy proposition of plant-based products.

“The popularity of functional food has drastically increased and consumer health concerns have risen.” October 2021, Euromonitor

The Pandemic has heightened consumer health awareness but blinded us to ever-existing health concerns....



Source: WHO News Release Dec 9th, 2020, NMI data

We should not forget: Cardiovascular disease remains the global No. 1 cause of death.

Currently, after COVID and cancer, **heart health** is the most important health concern of Europeans.

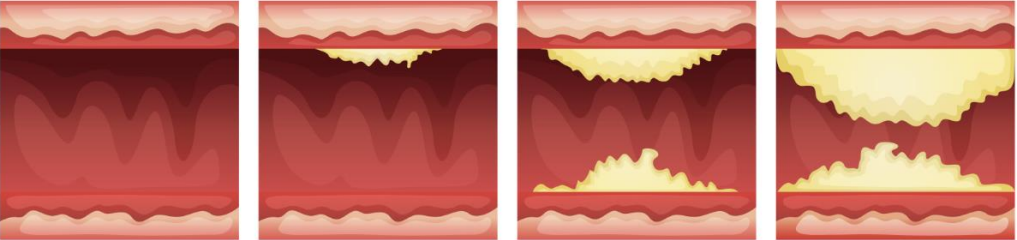
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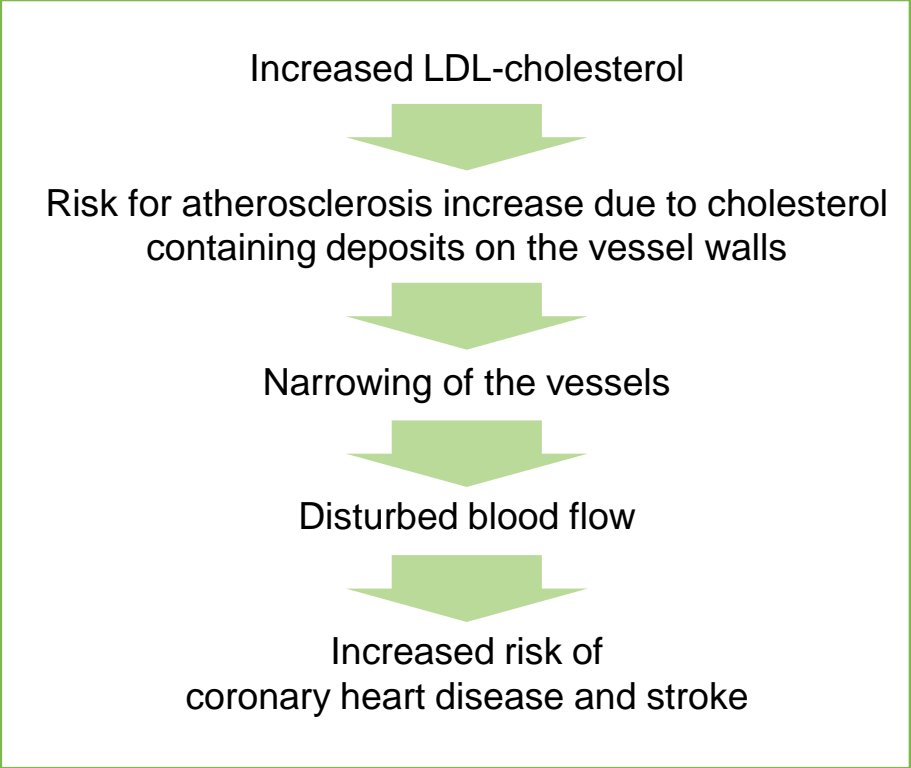
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High LDL – cholesterol is an important risk factor for CVD



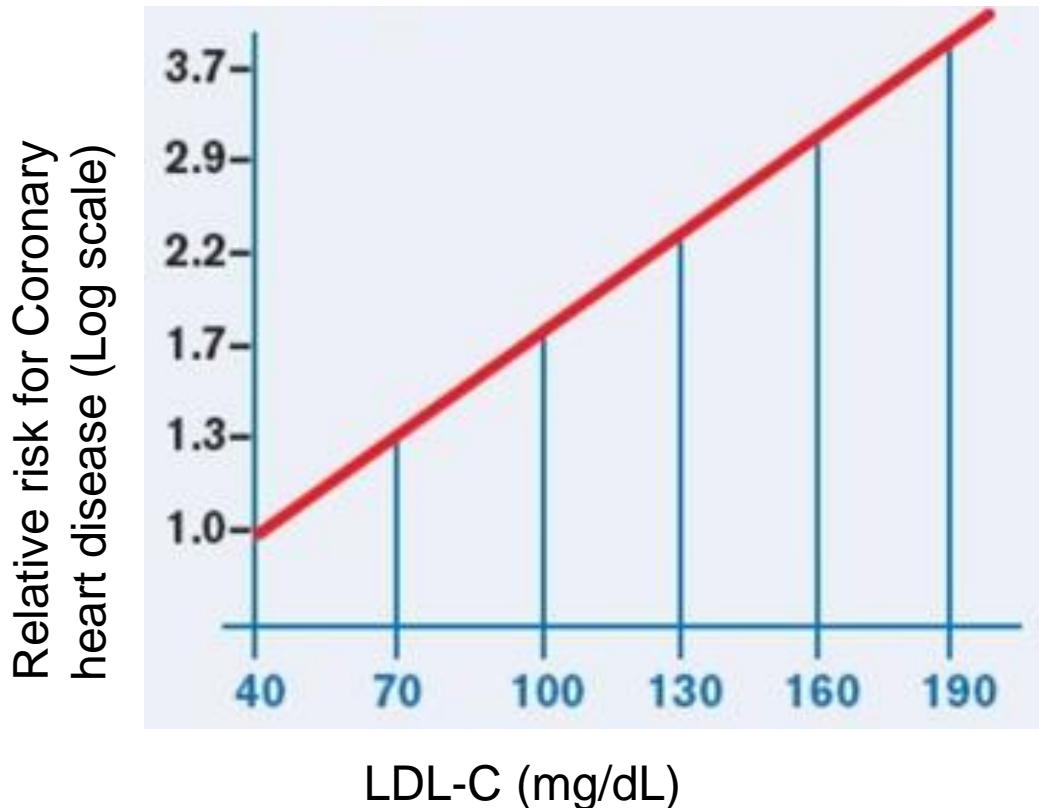
Artery → Deposition of cholesterol in the plaques → Plaques enlarges, blocking artery

Cross-section view



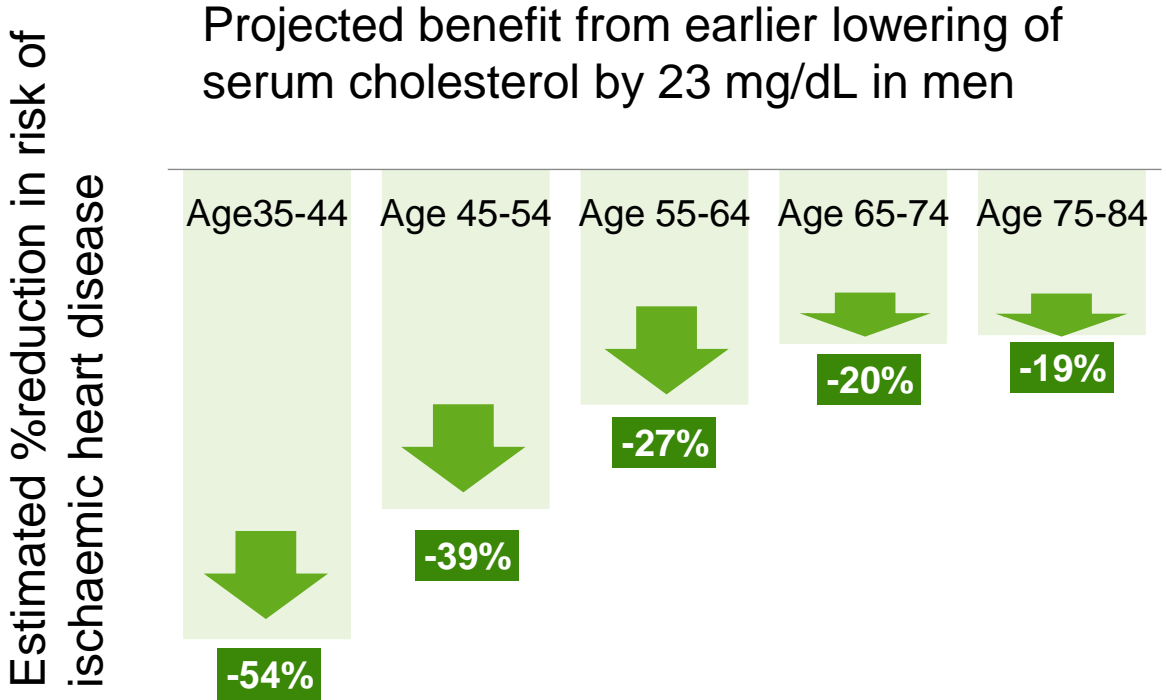
LDL-C lowering – primary target to manage cardiovascular risk

LDL-C level: the lower, the better



Source: Grundy S et al, Circulation, (2004)

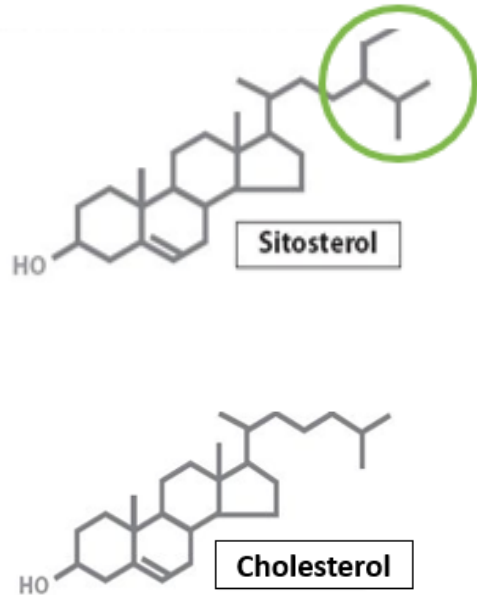
LDL-C reduction: the earlier, the better



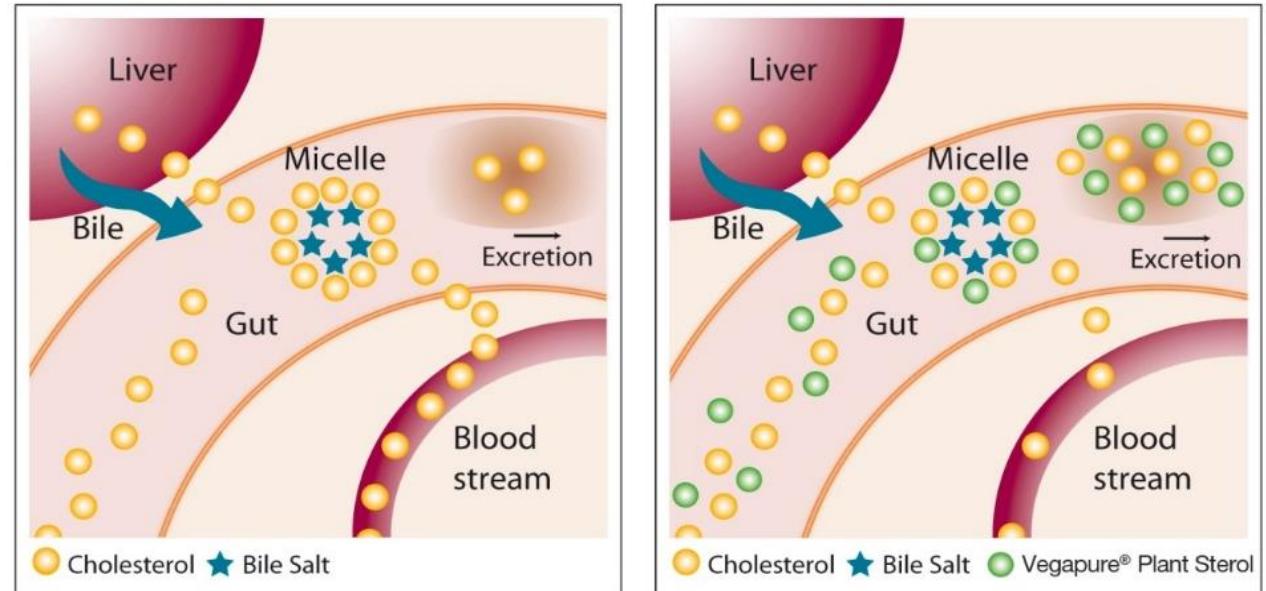
Source: Law MR et al. BMJ, (1994)

Plant sterols: what they are and what they can do

Plant sterols are naturally occurring molecules structurally similar to cholesterol



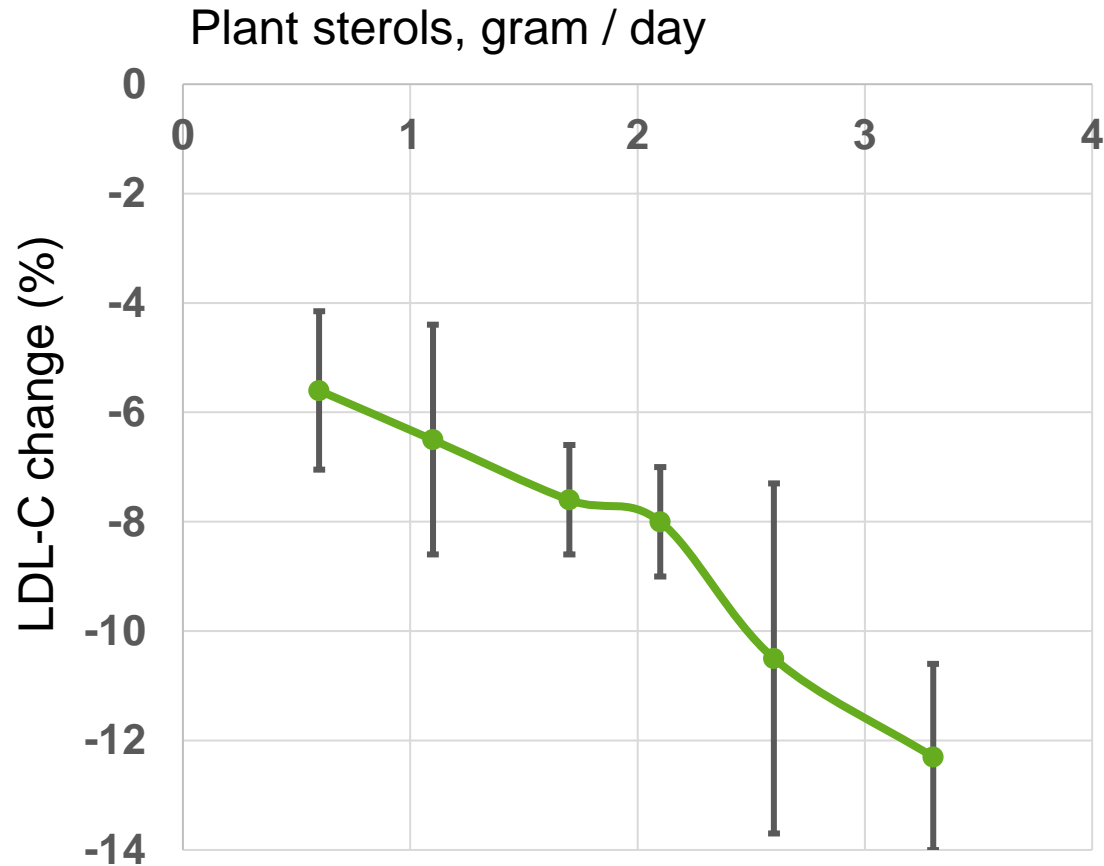
Plant sterols can reduce the intestinal absorption of cholesterol by decreasing the incorporation of dietary and biliary cholesterol into micelles



Digestion without Phytosterols

Digestion with Phytosterols

Clear dose-responsive LDL-C lowering effect by plant sterols



(Over at least 2 weeks of regular administration)

Cholesterol lowering effect of plant sterols was proven in a vast number of clinical trials

Repeatable, dose dependent effect: 1.5 - 3 g plant sterols / day gradually reduce LDL-cholesterol by 7 – 12.5% after at least 2-week administration.

Documented in a variety of formats: e. g. spreads, dairy, beverages and soft gels

Sources: Gylling H et al, *Atherosclerosis* (2014); Ras RT et al, *British Journal of Nutrition*, (2014); Trautwein EA et al, *Nutrients* (2018)

Plant sterols in diet are too low to exert cholesterol lowering effects

Average plant sterol intake in adults is **Less than 400 mg / day**

Major sources:
Fat and oils, nuts,
bread and cereals,
fruits and vegetables



Recommended intake of plant sterols for Cholesterol-lowering effect: **2 g / day***

Impossible to achieve with a normal diet

A grid of food items with labels: 100 apples, 160 carrots, 330 tomatoes, 400 ml rapeseed oil, 55 oranges, 70 slices wholemeal bread.

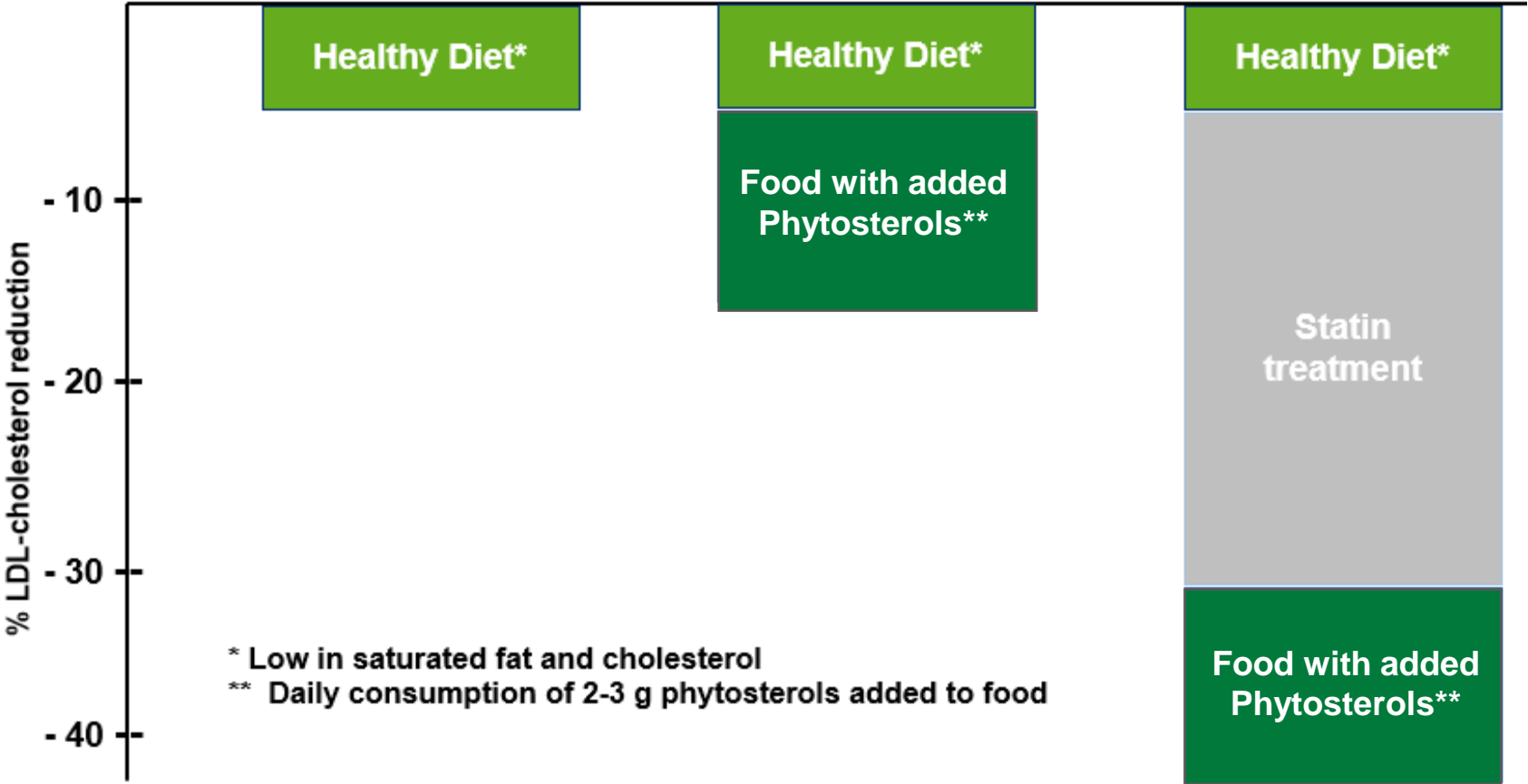
 100 apples	 160 carrots
 330 tomatoes	 400 ml rapeseed oil
 55 oranges	 70 slices wholemeal bread

Additional sources of plant sterols are required for the cholesterol benefit

Adding plant sterols to food / dietary supplements can help to reach the recommended daily amount.

Source: Gylling H et al, Atherosclerosis, (2014)

Plant sterols complement cholesterol-lowering of statins and healthy diet



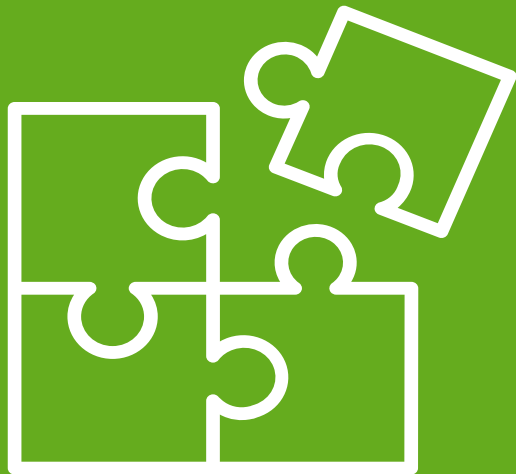
Source: adapted from www.jpssa-association.com; accessed Nov 23, 2021

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Innovating with Plant Sterols



- ✓ **Consumer trends**
- ✓ **Robust science**
- ✓ **Authorized health claims**
- ✓ **Technical feasibility**

Vegapure® plant sterols product range includes powders and oils as free sterols and/or as sterol esters

Vegapure® - Sterol Esters Non-GMO, kosher and halal certified

Vegapure® 95 E / WE
(oily formulation)

Vegapure® 95 WE
(oily formulation)

Vegapure® 67 WDP E N
(powder formulation)

Vegapure® - Free Sterols Non-GMO, kosher and halal certified

Vegapure® F 40 WDP E
(powder formulation)

Vegapure® 867 G N
(powder formulation)



Get in contact with our technical experts for more details and on product matching to fit your R&D plans

Our virtual assistants provide direct and speedy access to all standard product information

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Market examples for Plant Sterols/ Plant sterol esters

Milk type products



Yoghurt-type products



Soya/Rice drinks



Fat spreads



Dietary supplements



Others...



www.amazon.com; www.avonmore.ie; www.danacol.es; www.pro-activ.com; www.centralecheraasturiana.es; www.trolley.co.uk; www.carrefour.es; www.innit.com; www.ronssupermarket.com; www.vitabiotics.com; www.farmaciaturcifalense.com; www.lifetimecheese.com; www.vitalife.be; www.nestle.com.sg/brands/milk/nestle_nesvita_omega_plus_acticol

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Food Supplement Concept: Jelly stick pack with Plant Sterols

“At the heart of my health...”

What is the market need?

- Cardiovascular diseases (CVDs) are the number one cause of death globally
- In 2021, heart Health is one of the top 3 health concerns amongst Europeans
- Consumers seek great tasting and convenient health solutions to support their diet & lifestyles

What is the consumer benefit?

- Clinically proven support and maintenance for the cardiovascular system
- Jelly format: convenient and tasty alternative to standard tablets and capsules
- Provides 1.5 g plant sterols/20 g sachet

... support your heart!



Health Ingredients

Serving Size: 20 g sachet
Vegapure® 95 FF 1.6 g

Sources: WHO Fact Sheet 2021, FMCG 2020

Suggested concept and formulation serve for guidance only. Buyer is solely responsible for meeting regulatory, suitability and safety requirements as well as for securing freedom-to-operate for the products it sells.

NOTE: The above claims may not be used in any promotion, marketing, or information relating to products intended for sale or reasonably anticipated for use in the United States.

Beverage Concept: Soy milk functionalized with Plant Sterols

“Convenient great tasting, with no compromise on functionality...”

What is the market need?

- Cardiovascular diseases (CVDs) are the number one cause of death globally
- 80% of these premature deaths could have been prevented by appropriate diet & lifestyle
- Increasing health conscious consumers seek to incorporate natural and/or plant-based food options into their lifestyle

What is the consumer benefit?

- Soy milk format which suitable for vegetarian/vegan diets and lactose intolerant individuals
- Clinically proven support and maintenance for the cardiovascular system
- Provides 1g plant sterols/ 250 ml serving

... support your heart!

Sources: WHO Fact Sheet 2021, FMCG 2020

Suggested concept and formulation serve for guidance only. Buyer is solely responsible for meeting regulatory, suitability and safety requirements as well as for securing freedom-to-operate for the products it sells.

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Health Ingredients

Serving Size: 250 ml
Vegapure® 95 E 1 g

Why plant sterols from BASF?



Vegapure® has built the foundation for **plant sterol market in food**



Vegapure® answers a **highly relevant consumer trend** by being made from **natural, renewable, plant-based material**



Vegapure® permits **easy product development** by offering **good sensory properties** regarding **taste, odor and color**, combined with many application examples



Vegapure® has taken the **leadership in science**



Vegapure® allows easy market access with **global regulatory approvals**
(e.g. GRAS, Novel Food EU & China)



Vegapure® stands for **high purity** and **above average active sterol content** as well as **“below required” impurities**



Vegapure® stands for a **broad range of diverse products** for manifold applications

2 of our key digital tools include RegXcellence® & MyProductWorld: platforms to support critical decision-making



Your benefits

- **Direct and speedy access** to standard information (Regulatory, Technical & Application)
- **Enhanced experience** with BASF
- **Explore BASF's portfolio** at your fingertips
- **Stay updated** with change notifications



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We create chemistry