



## Botanical Ingredients

# LIPOPHYTOL™ microcapsules Water dispersible plant sterols for cholesterol reduction

### Description

LIPOPHYTOL™ microcapsules is a dispersible form of pine tree sterols which has been microencapsulated to make them water dispersible.

### Composition

**No palm free:** 90% pine tree phytosterols, maltodextrin and sucrose ester

**Palm free:** 90% pine tree phytosterols, maltodextrin and sodium stearyl-2-lactylate.

### A nutritional view

High blood cholesterol level is the first risk factor for coronary heart disease. The cholesterol lowering effect of plant sterols is well documented in literature. Consumption of 1.5 to 2.4 grams of plant sterols per day has been found to potentially lower LDL-Cholesterol by 7% to 10%.

The European Food Safety Authority (EFSA), has approved claims for plant sterols namely: i) *"plant sterols have been shown to lower/ reduce blood cholesterol with a daily intake of 1.5-2.4 g of plant sterols/stanols"* and ii) *"plant sterols/stanols contribute to the maintenance of normal blood cholesterol levels with a daily intake of 0.8 g of plant sterols/stanols"*.

The U.S. Food and Drug Administration (FDA) approved the following claim for phytosterols: *"foods containing at least 0.4 grams per serving of plant sterols, eaten twice a day with meals for a daily total intake of at least 0.8 grams, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease"*.

Due to their insolubility in water and lipids, phytosterols incorporation into foods and beverages formulations has been very challenging.

In this respect, LIPOPHYTOL™ microcapsules facilitates incorporation of phytosterols in food matrices due to its high dispersibility.

### Applications

Dairy products, yoghurts, soya drinks, rye bread, cheese type products, dietary supplements, etc.

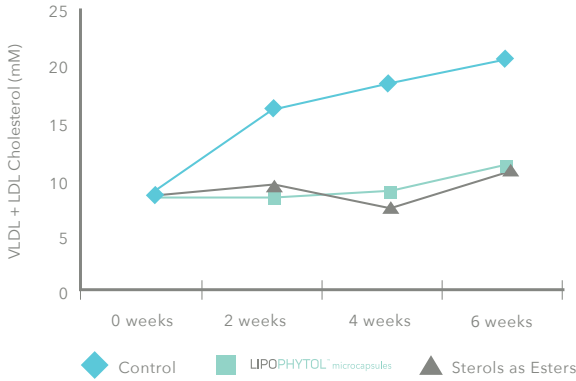
### Competitive advantages

- Efficient cholesterol reduction
- High phytosterols concentration
- Readily dispersible
- Fat-free ingredient

## Cholesterol reduction

The cholesterol lowering effect of LIPOPHYTOL™ microcapsules was studied in vivo using knock out Apo E mice in a study conducted by Dr. Blanco at the Institut de Recerca de l'Hospital de la Santa Creu i San Pau in Barcelona.

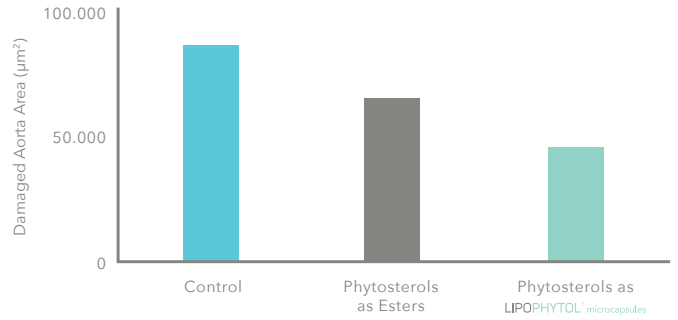
Three groups of mice were fed either i) a high fat diet (control), ii) a high fat diet with LIPOPHYTOL™ microcapsules or iii) a high fat diet with phytosterol esters.



LIPOPHYTOL™ microcapsules significantly reduced the concentration of VLDL+LDL cholesterol in serum compared to the control

## Protective effect against aortic lesions

The effect of LIPOPHYTOL™ microcapsules on aorta atherosclerotic lesions was examined on every group of mice after 8 weeks of treatment. Heart and proximal aortas were removed and atherosclerotic lesions quantified.

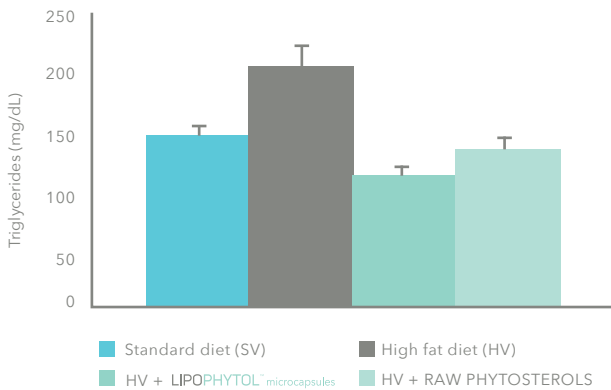


LIPOPHYTOL™ microcapsules resulted in reduced damaged aorta, an indication of ability to protect arteries

Atherosclerosis damage test indicated that LIPOPHYTOL™ microcapsules was the most effective in protecting mice arteries from the harmful effects of the high fat diet.

## Tryglicerides reduction in hamsters

Serum analyses were determined for LIPOPHYTOL™ microcapsules and raw phytosterols diets, to assess their activity on triglyceride levels.



Results indicate that LIPOPHYTOL™ microcapsules might enhance the activity of phytosterols against hypertriglyceridemia

For more information, visit [www.lipofoods.com](http://www.lipofoods.com)

