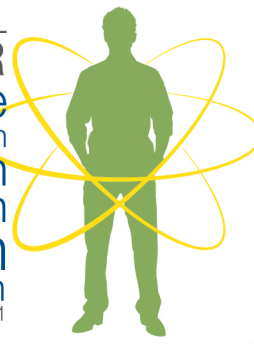


# New considerations for cholesterol management

CHOLESTEROL IS VITAL FOR cell structure hormone production brain function nerve function skin health immune function and much more...<sup>1</sup>



SOURCES OF CHOLESTEROL IN THE BODY:<sup>2</sup>  
25% dietary sources  
**75%** made by the liver



**1 IN 3**  
Australians over 18 years has **ABNORMAL OR HIGH CHOLESTEROL LEVELS**<sup>3</sup>



almost **50%** of people with **DYSLIPIDAEMIA** are **NOT** on **MEDICATION**<sup>3</sup>

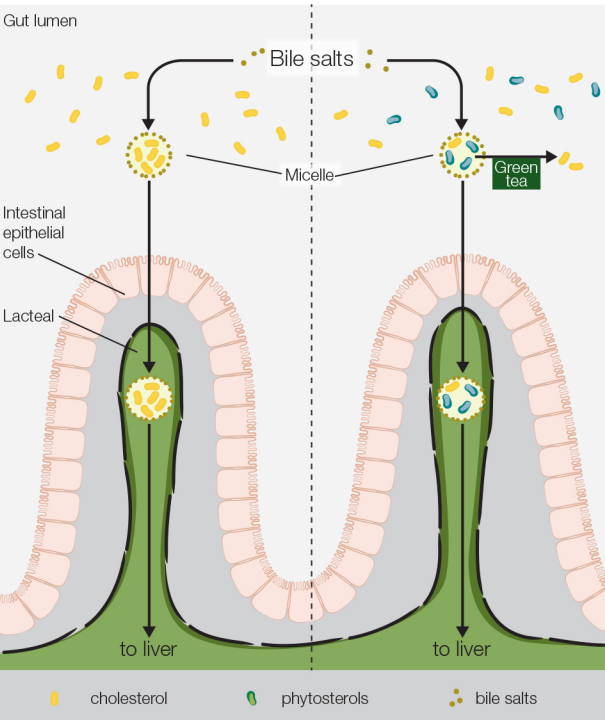


Lifestyle factors such as **SMOKING & OBESITY** are associated with **ABNORMAL CHOLESTEROL**<sup>3</sup>



## MAINTAINING HEALTHY CHOLESTEROL LEVELS<sup>4-16</sup>

### REDUCING INTESTINAL ABSORPTION OF CHOLESTEROL: PHYTOSTEROL ESTERS, GREEN TEA AND BETA-CAROTENE<sup>4-8</sup>

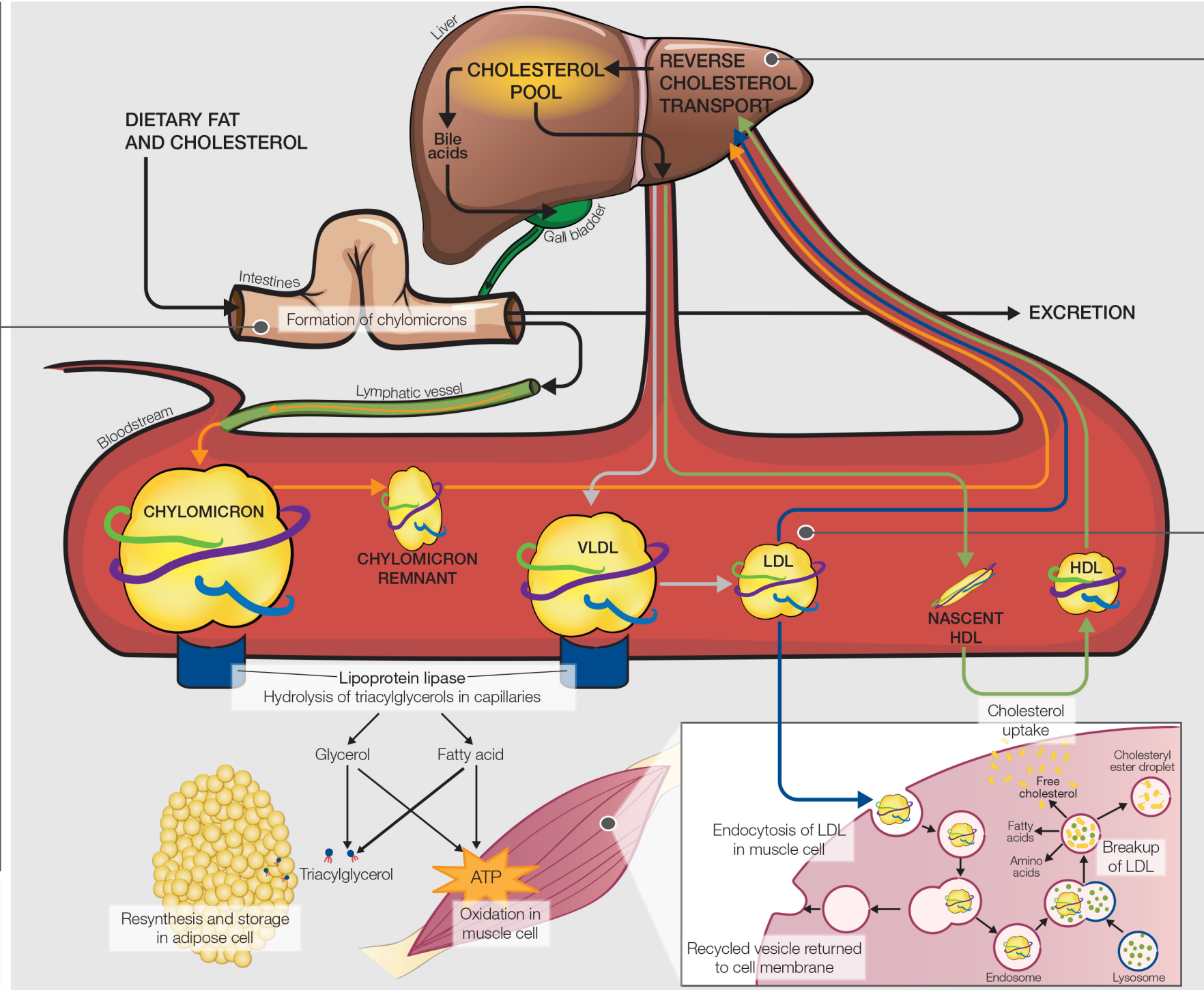


**Phytosterols** and cholesterol have a similar chemical structure. Phytosterols compete with dietary and biliary cholesterol for incorporation into micelles, therefore lowering intestinal cholesterol absorption.

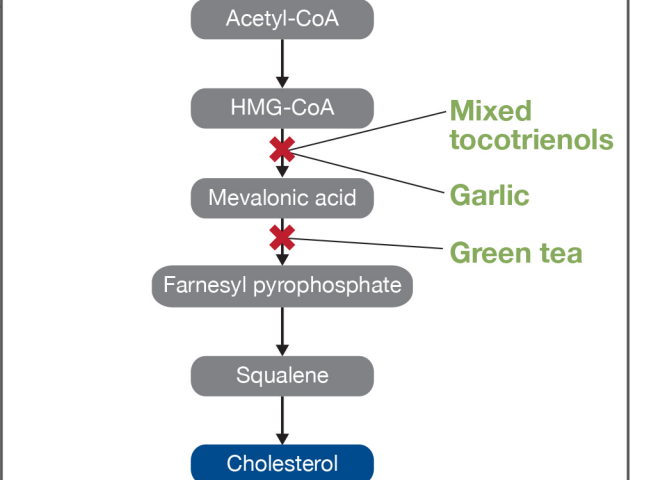
**Green tea** catechins reduce intestinal cholesterol absorption by interfering with the micellar solubility of cholesterol. Green tea catechins form insoluble co-precipitates with cholesterol and increase faecal excretion of cholesterol.

As well as lowering cholesterol absorption, phytosterols also lower plasma concentrations of carotenoids, notably beta-carotene. Although the exact mechanism remains unknown, a moderate increase in dietary carotenoids has been found to effectively maintain blood carotenoid concentrations.

HDL: high density lipoprotein; LDL: low density lipoprotein; VLDL: very low density lipoprotein; ATP: adenosine triphosphate; CoA: coenzyme A; HMG-CoA: 3-hydroxy-3-methylglutaryl-coenzyme A.

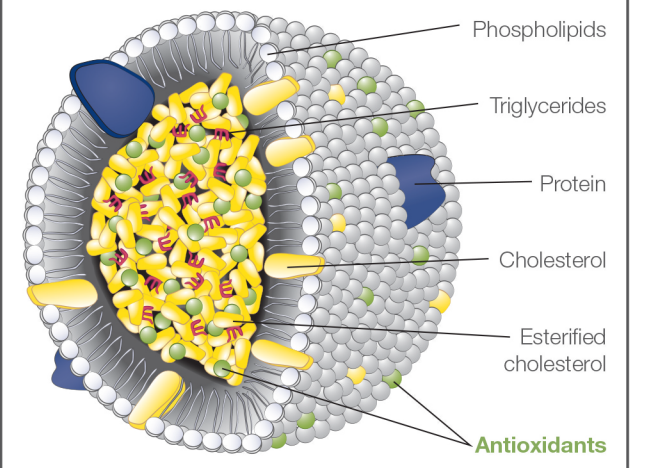


### REDUCING CHOLESTEROL BIOSYNTHESIS: MIXED TOCOTRIENOLS, GARLIC AND GREEN TEA<sup>8-16</sup>



**Tocotrienols, garlic** and **green tea** downregulate cholesterol biosynthesis in the liver by inhibiting various enzymes. Tocotrienols and garlic inhibit the key enzyme HMG-CoA reductase. Green tea inhibits three enzymes – mevalonate kinase, mevalonate decarboxylase and farnesyl pyrophosphate synthase.

### ANTIOXIDANT PROTECTION OF LDL: MIXED TOCOTRIENOLS AND BETA-CAROTENE<sup>8-14</sup>



Atherosclerosis is related to oxidative changes of LDL. Antioxidants such as **mixed tocotrienols** and **beta-carotene** prevent the formation of oxidised LDL during atherogenesis.