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CHOLESTEROL

Technical Bulletin

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Cholesterol is an odorless, tasteless, white, waxy substance found only in fats from animal sources. Cholesterol is one of many sterols, and is essential for human health. The body uses cholesterol to manufacture bile acids, hormones, vitamin D, and cell walls. It is found in high concentrations in the brain, spinal cord, muscle tissue, and liver. There is no minimum requirement for cholesterol in the diet, because humans can synthesize all the cholesterol they need. However, for some people high cholesterol content in their blood serum has been linked to coronary heart disease. In turn, diets high in saturated fats are typically considered the cause of high blood serum cholesterol.

Most people are familiar with the terms: Total serum cholesterol (TC), high density lipoprotein associated cholesterol (HDL) and low density lipoprotein associated cholesterol (LDL). These refer to the total level and form of cholesterol in the blood stream. Cholesterol is not soluble in water, therefore, the body wraps it in a protein package (called a lipoprotein), so it can be transported to various parts of the body via the blood stream. High serum cholesterol levels have been associated with coronary heart disease. Reducing the level of saturated fats and increasing the intake of dietary fiber, particularly soluble dietary fiber, in the diet may lower the level of serum cholesterol, thereby reducing the likelihood of developing heart disease.

Cholesterol Content of Some Foods

Source	mg/100g	Source	mg/100g
Corned beef	98	Butter	220
Beef jerky	110	Ham	53
Whole rib, broiled	82	Braised beef liver	389
Smoked sausage	68	Cheddar Cheese	107
Leg of lamb	93	Large whole egg	426
Chicken, ½ breast	83	Whole milk	14
Cod	58	Shrimp	195
Yogurt, skim	4 mg / cup	Sour cream	102 mg / cup

ASSAY PRINCIPAL AND APPLICABILITY

Cholesterol is unbound from food matrices using acid hydrolysis and is then extracted into a mixture of ethyl and petroleum ethers. Fatty acids which are also extracted are derivatized to their respective methyl esters with methanol and boron trifluoride. Cholesterol is then quantified by capillary column gas chromatography.

Lower Detection Limit: 1 mg/100g

Reporting Units: mg/100 g

Information required with sample: Estimate of cholesterol and fat level

Special Notes: Approximate cholesterol and fat level estimates help to ensure that adequate sample is taken to assure cholesterol detection, and that the fat is completely derivatized.

NUTRITION INFORMATION

The daily value for cholesterol intake is less than 300 mg/day for a 2000 calorie diet.

The recommended serum cholesterol level for most individuals is less than 200 mg/dL.

REFERENCES:

AOAC Method 996.06

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