

MONOUNSATURATED FATS IN THE NORTH AMERICAN DIET

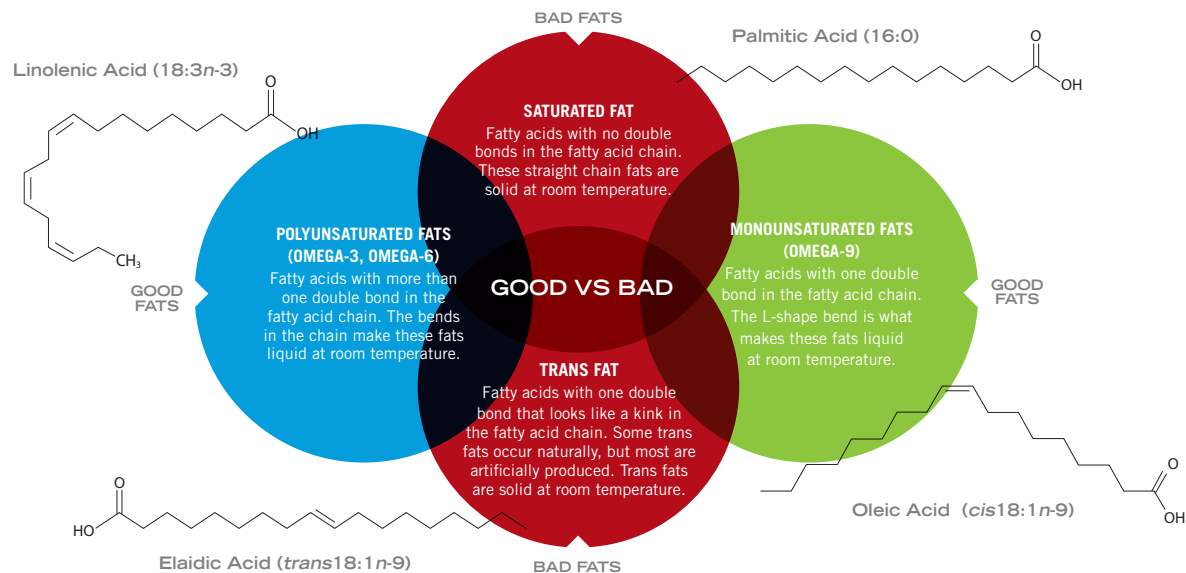
Dietary guidelines in both the United States and Canada suggest people should consume a diet with no artificial trans fats, low saturated fats, and high in 'good fats'. These guidelines and the increased interest in healthy eating by American consumers have encouraged the food manufacturing and food service industries to reduce the amount of trans and saturated 'bad' fats in food products. Monounsaturated fatty acids (MUFA), also known as omega-9 fatty acids, offer a functionally stable alternative to these 'bad' fats and provide valuable health benefits protecting against metabolic syndrome and cardiovascular disease.¹ MUFA-rich oils are cost-effective, reliably sourced solutions with the improved functionality, stability and health profiles food companies are seeking and the clean taste consumers demand. Omega-9 Canola Oil, a high MUFA oil, has replaced more than 1.5 billion pounds of trans and saturated fat from the North American food supply since 2005.

This white paper on dietary MUFA will reveal the importance of incorporating MUFA into the diet and the associated health attributes by including the following topics:

- The emphasis of MUFA in dietary guidelines
- MUFA effects on cardiovascular health
- MUFA effects on blood cholesterol and triglycerides
- MUFA effects on weight maintenance and body composition
- MUFA effects on blood pressure
- MUFA effects on insulin sensitivity and type 2 diabetes
- Other health benefits of MUFA

THE DIFFERENCES BETWEEN FATS

MUFA are fatty acid chains containing one double bond. Conversely, polyunsaturated fatty acids (PUFA) contain two or more double bonds and saturated fatty acids (SFA) have no double bonds. MUFA have a higher melting point than PUFA, and both are liquid at room temperature, whereas SFA are solid at room temperature. The major dietary MUFA is oleic acid; it naturally occurs in the *cis*-configuration, whereas trans fatty acids (TFA) are in the more rigid *trans*-configuration which is produced during chemical hydrogenation of vegetable oils.



THE EMPHASIS ON FAT QUALITY IN DIETARY GUIDELINES

Guidelines and recommendations from multiple reputable organizations and associations stress the importance of fat quality (specific fatty acids) as well as quantity (total dietary fat). Joint guidelines from the American Dietetic Association and Dietitians of Canada recommend total fat intakes between 20 to 35 percent

HEALTH CLAIMS IN CANADA AND THE UNITED STATES

“Monounsaturated and polyunsaturated fatty acids reduce blood cholesterol concentrations and help lower the risk of heart disease when they replace saturated fatty acids in the diet.”

– Institute of Medicine, 2002²

“Replacing saturated fats with polyunsaturated and monounsaturated fats from vegetable oils helps lower cholesterol—High cholesterol is a risk factor for heart disease.”

– Health Canada authorized Health Claim, 2012³

of energy, with an emphasis on unsaturated fats—primarily, MUFA intakes up to 25 percent of energy, and secondarily, PUFA intakes up to 10 percent of energy.⁴ As part of an overall healthy eating pattern, the *2010 Dietary Guidelines for Americans* recommends consuming less than 10 percent of energy from SFA and to keep TFA consumption as low as possible.⁵ To achieve this goal, the guidelines also recommend isocalorically replacing solid fats and foods containing partially hydrogenated oils with vegetable oils and foods high in unsaturated fats.⁵ For CVD risk reduction, the

American Heart Association emphasizes reducing SFA intake to <7 percent of energy, *trans* fat intake to <1 percent of energy and <300mg of cholesterol per day.⁶

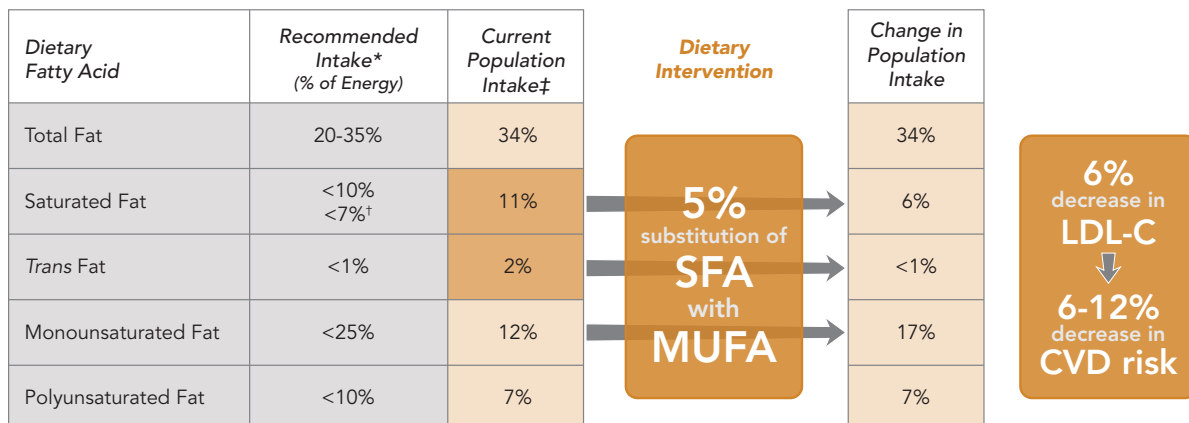
While approximately one-third of daily energy in the typical Western diet is from fats and oils⁷—a total amount in line with current recommendations⁴⁻⁶—intakes of SFA and TFA in the American population remain in excess of these recommendations.⁷ An increase in the use of MUFA-rich vegetable oils, such as omega-9 oils, as a substitute for common dietary fats and oils in the United States would, however, increase the percentage of people complying with current dietary intake recommendations.^{4-6,8}

THE STATE OF NORTH AMERICA'S HEALTH

The rate of CVD in North America reflects unhealthy lifestyle choices, namely atherogenic diets and lack of physical activity. Metabolic syndrome—a combination of metabolic disorders including low “good” cholesterol, high triglycerides, increased waist circumference, elevated blood pressure and high blood glucose levels—is also becoming more prevalent and is associated with an increased risk of developing diabetes and CVD.¹ Currently, one in three Americans and one in five Canadians have metabolic syndrome, with an estimated 80 million Americans and 1.6 million Canadians affected by CVD. Studies show that as much as 60 percent of cardiovascular events could be prevented by incorporating healthy lifestyle choices, including moderate-to-vigorous exercise, abstaining from smoking, healthy body weight and eating a healthy diet.⁹ Cumulative scientific evidence also suggests that dietary MUFA, specifically as a substitute for SFA, offers a comprehensive, effective approach to reducing risk factors for metabolic syndrome and CVD.¹

The perception that fat makes you fat is changing. Consumer awareness of the health implications of dietary fat quality versus fat quantity is increasing.¹⁰ In response to growing consumer demand, as well as dietary recommendations and food labeling

Recommended Versus Current Fatty Acid Intakes and CVD Risk



*American Dietetic Association and Dietitians of Canada recommendation for fatty acid intakes

†American Heart Association recommendation for cardiovascular disease prevention

‡What We Eat in America, NHANES 2007-2008 (mean of US male and females (ages20-59))

regulation, the edible oil industry has developed high-oleic vegetable oils with improved fatty acid profiles—void of TFA, very low in SFA, while uniquely high in heart-healthy MUFA. High-oleic vegetable oils with superior health, performance and flavor attributes offer an ideal substitute for dietary oils rich in unhealthy *trans* fats and SFA in foodservice and food processing industries.

MONOUNSATURATED FATS EFFECTS ON CARDIOVASCULAR HEALTH

A review published in the *Archives of Internal Medicine* demonstrated strong evidence of a 20 percent reduction in the incidence of coronary heart disease with consumption of MUFA.¹¹ In addition, it was estimated that replacing 5 percent of energy from SFA or 2 percent of energy from *trans* fats with MUFA decreased coronary heart disease risk by ~30 percent and ~50 percent, respectively.¹² In contrast, a 5 percent energy replacement of MUFA with carbohydrates resulted in a ~25 percent increase in coronary heart disease risk.¹² Therefore, incorporating plant-derived MUFA at the expense of SFA, *trans* fats and carbohydrates results in a significant positive impact on cardiovascular health.

MONOUNSATURATED FATS EFFECTS ON BLOOD CHOLESTEROL AND TRIGLYCERIDES

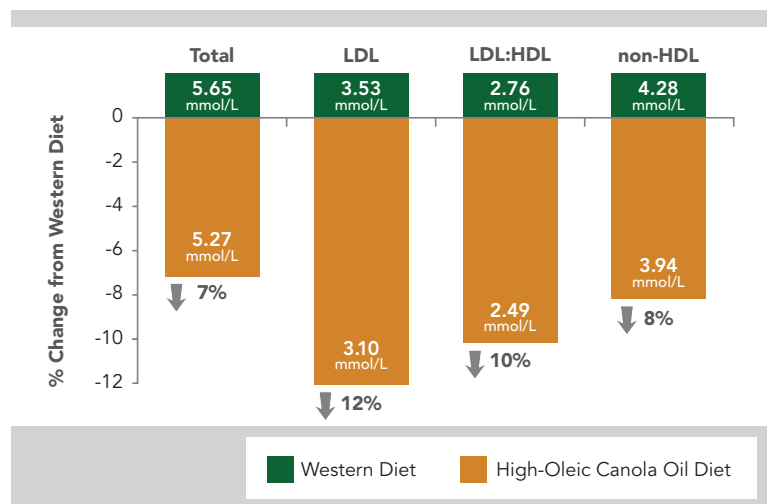
Elevated LDL-cholesterol remains the primary modifiable risk factor for coronary heart disease and a major focus of dietary intervention strategies.⁶ Research shows that blood cholesterol and triglyceride levels decrease dramatically in both healthy people and those at risk for CVD when diets high in MUFA versus SFA or *trans* fats are consumed, even for only a few weeks.¹³⁻¹⁵ More specifically, replacing the intake of SFA with MUFA lowers total and LDL-cholesterol without lowering HDL-cholesterol, therefore, improving the total LDL:HDL-cholesterol ratio.¹³⁻¹⁵ Consumption of MUFA versus SFA also results in a reduction in small, dense LDL particles¹⁶—the most dangerous blood lipid that can penetrate the walls of the arteries and increase atherosclerosis.¹⁷

In a study conducted at the University of Manitoba,¹⁸ replacing high-SFA oils typical in the Western diet with high-oleic canola oil reduced LDL-cholesterol by 12 percent and total cholesterol by 7 percent. In addition, consumption of high-oleic canola oil preserved HDL-cholesterol levels, reducing the LDL:HDL-cholesterol ratio by 10 percent and non-HDL-cholesterol concentrations by 8 percent—both strong predictors of coronary atherosclerosis and cardiovascular events.

MONOUNSATURATED FATS EFFECTS ON WEIGHT MAINTENANCE AND BODY COMPOSITION

Consumption of MUFA and PUFA is associated with the maintenance of body weight and waist circumference (abdominal fat), whereas SFA and *trans* fats lead to deleterious increases in these measures.^{19,20} Research demonstrates that when MUFA replace SFA in the diet there is an increase in fat oxidation and daily energy expenditure²¹—mechanisms associated with long-term weight management. Recent research revealed that long-term consumption of high-MUFA diets resulted in a decrease in fat mass by 2kg as compared with low-MUFA diets.²² In a large multi-center intervention trial of American and Canadian adults at risk for metabolic syndrome, consumption of canola and high-oleic canola oils beneficially reduced abdominal fat mass²³—an important effect associated with a decrease in metabolic syndrome, obesity and cardiovascular risk.

Cholesterol-lowering Effects of High-Oleic Canola Oil Versus a Western Diet



MONOUNSATURATED FATS EFFECTS ON BLOOD PRESSURE

Studies have shown that long-term consumption of high-MUFA diets decreased systolic blood pressure by -2.26 mm Hg and diastolic blood pressure by -1.15 mm Hg as compared with low-MUFA diets, a reduction estimated to decrease cardiovascular mortality by 6 percent.²² In addition, vegetable oils rich in oleic acid, such as olive oil, reduce blood pressure versus vegetable oils low in oleic acid, such as soybean oil.²⁴

MONOUNSATURATED FATS EFFECTS ON INSULIN SENSITIVITY AND TYPE 2 DIABETES

In people with type 2 diabetes, high-MUFA diets versus low-MUFA diets have been shown to reduce fasting glucose by 8.5 mg/dL, estimated as an 11 percent reduction in CVD risk.²⁵ The KANWU study of healthy people from five different countries demonstrated that even with a relatively high intake of total fat (up to 37 percent of energy), consumption of a MUFA-rich diet for three months improved insulin sensitivity by 8.8 percent, whereas a SFA-rich diet decreased insulin sensitivity by 12.5 percent.²⁶

OTHER HEALTH BENEFITS OF MONOUNSATURATED FATS

Studies have shown that dietary MUFA provide additional cardiovascular health benefits, including protection against LDL oxidation, a reduction in inflammatory biomarkers and cell adhesion molecules, while protecting against platelet coagulation, thrombosis and endothelial dysfunction.²⁷

SUMMARY

The prevalence of CVD and other metabolic conditions in North America can be modified through changes in dietary fat quality. In combination with healthy diet and lifestyle changes, consumption or substitution of *trans* fats and SFA with MUFA promotes healthy blood cholesterol and triglyceride concentrations, regulates body weight and composition, mediates blood pressure, and improves insulin sensitivity and glucose metabolism. This dietary strategy offers a comprehensive approach to reducing metabolic syndrome, increasing cardiovascular health and ultimately improving population health and wellness.¹

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