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Medicinal Chemistry 2020: Effects of dietary saturated fat on serum cholesterol levels: Scientific Opinion- Ashour Saleh Eljamil-University of Tripoli

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Introduction:

It is well established that diet is the primary therapeutic approach for persons who are at increased risk of premature heart disease, as a result of having elevated serum cholesterol levels (more than 200 mg/dl). Many dietary recommendations have been published in the last five decades that have advised people to reduce their intake of total fat, saturated fat and cholesterol to improve their cholesterol level and decrease the risk of coronary heart disease (CHD). However, these recommendations have recently been challenged by claims that dietary fat, saturated fat and cholesterol do not affect serum cholesterol levels and the risk of CHD.

Mechanism:

Dietary cholesterol as a "nutrient of concern" has been dropped by the Dietary Guidelines Advisory Committee (DGAC) report (2015), so as to accord with evidence that there is no appreciable relationship between dietary cholesterol and serum cholesterol or clinical cardiovascular disease (CVD). Moreover, the DGAC, placed no limit on total fat consumption. Although evidence for an association between saturated fat intake and CHD remains controversial, it is widely accepted that saturated fats can raise serum levels of total cholesterol (TC) which increase is reflected in the low-density lipoprotein (LDL) fraction. A meta-analysis (Siri-Tarino et al. 2010) of prospective cohort studies has indicated no association between saturated fat intake and CHD. While a randomized trial (Dreon et al. 1998) has found that intake of saturated fats decreases the small-dense LDL-cholesterol fraction but increases the large-buoyant LDL-cholesterol fraction. High levels of large-buoyant LDL fraction may be resistant to oxidation and anti-atherogenic and therefore protective against CHD, whereas the small-dense LDL fraction is more susceptible to oxidation, is pro-atherogenic, and high levels of this LDL fraction are associated with greater CHD risk. Hence, consumption of saturated fat may alter the ratio of these fractions and be protective against CHD.

In this paper I will review the major published effects of dietary fat, saturated fat and cholesterol on serum cholesterol levels and the increased risk of CHD. Omega-3 polyunsaturated fatty acids (n-3PUFA) are best absorbed when combined with a high fat diet. However, the role of dietary fatty acids in altering the inclusion of n-3PUFA in blood lipids in humans has not been previously investigated. Omega-6 polyunsaturated fatty acids (n-6PUFA) compete with n-3PUFAs in metabolic pathways and synthesize in phospholipids, whereas saturated fat (SFA) promotes the incorporation of n-3PUFA in tissues. , Plasma and erythrocytes and blood lipid profiles (total cholesterol, low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and triglycerides).The effects of dietary fatty acids on the risk of coronary artery disease (CAD) have traditionally been limited by their effects on LDL cholesterol. Fat, however, also affects HDL cholesterol, and HDL cholesterol levels are significantly higher in CAD than LDL cholesterol. The aim is to evaluate the effects of total fatty acids on total ratio of HDL cholesterol and serum lipoprotein.

Methods:

We conducted a meta-test for 60 selected trials and calculated the effects of total and total fat type: HDL cholesterol and others on lipids. The rate does not change if carbohydrates replace fatty acids, but will decrease if fatty acids do not work instead of saturated fatty acids. Total result: HDL cholesterol is twice as high as fatty acids in place of fatty acids with a mixture of carbohydrates and fatty acids. Lauric acid increased cholesterol, but its main effect was HDL cholesterol. As a result, lauric acid-rich oil lowers HDL cholesterol levels. Myristic acid and palmitic acid had little effect on dose and steric acid had lower doses. The conversion of fat with carbohydrates led to a rapid increase in triacylglycerol concentrations. Effect of fat diet as a whole: Their effects on HDL cholesterol LDL can vary greatly. The effect of fat on these endangered markers is not necessarily considered an indicator of change in risk but must be confirmed in a forensic study or clinical trial. At that level, the risk is reduced more effectively if fatty acids and fatty acids are saturated with slaves instead of inactive fatty acids. The effects of carbohydrates and lauric acid-rich fats on the risk of CAD remain uncertain.The role of diet in cardiovascular diseases - especially fat - has been the subject of medical study and attention for more than a century. Since the, the premise that carbohydrate-lowering foods reduce cholesterol has been widely publicized. A recent

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article by Mack, MD, Sylvan Lee Weinberg in the Journal of the American College of Cardiologists not only looks at the growing medical and health evidence that allows carbohydrates to be controlled, but also addresses the health effects of high carbohydrate diets. All saturated fatty acids increased very low cholesterol levels, except for the identified stearic acid (C18: 0). Very few ubiquitous fatty acids have LDL cholesterol effects. Trans-monosaturated fatty acids, with equal amounts of saturated fatty acids, increase LDL cholesterol. Polyunsaturated fatty acids, three times lower than total fatty acids, lower LDL cholesterol. A diet high in saturated fatty acids increases high cholesterol, high-density lipoprotein (HDL) cholesterol, and without detectable trans-monoansaturated fatty acids, it reduces HDL cholesterol with some other carbohydrates. Lubricating linoleic acids include the Cock and Transfer Bonds as well as the coconut-monosaturated fatty acids and do not reduce ration as lipoprotein cholesterol. Omega-3 fatty acids come from low triglyceride levels.

Conclusion:

Although dice composition is important, the ict attendance of dyslipidemia can be attributed to the high intake of dietary supplements that replace saturated fat as the major factors that increase lipid and lipoprotein levels.The scientific name for the primary form of fat is found in the body and in the food. Most of the fat in the body is stored as triglycerides, while triglycerides are circulating in the blood. Triglycerides are made from three fatty acids and one glycerol molecule. These three fatty acids contain many fatty acids, monounsaturated fatty acids (MUFA) and polyunsaturated fatty acids (PUFAs).Triglycerides in the blood stream begin to make the liver more cholesterol, so the higher triglyceride levels are often associated with higher cholesterol and LDL cholesterol levels can hold them filled with hydrogen.

Biography

Prof: Ashour Saleh Eljamil was born and raised in Tripoli, Libya. He received his Ph.D. in 1988 from the Biochemistry Department, University College Dublin, National University of Ireland, where his interest in lipid biochemistry started. In February 1989 he joined the Department of Biochemistry, Faculty of Medicine, University of Tripoli, Tripoli, Libya, where he is full professor and was head of department from 2005 to 2007. In 1991, he headed the Biochemistry Department at the Medical Laboratory of Salahudeen Hospital in Tripoli. He was director of Medical Laboratory Department and Biochemistry unit at Tripoli Medical Centre from 1996 to 2004. He has presented papers at several scientific meetings in Dublin, Ireland (1986) and was an invited speaker at International Conferences on Drug Discovery and Therapy in Dubai, UAE in 2012, 2013 and 2014, and made presentations on low density lipoprotein-cholesterol, cholesterol and diet ,and serum lipid patterns in type 2 diabetes mellitus. Also plenary speaker, (Effects of Dietary Plant Polyunsaturate

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