

Short Review on Hyperlipidemia

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ABSTRACT

Hyperlipidemia is a heterogeneous group of disorders characterized by an excess of lipids in the bloodstream. The concentrations of lipids, such as triglycerides (TG), cholesterol (TC) and low density lipoprotein (LDL) increase or the level of high density lipoprotein (HDL) decrease in the blood. Hyperlipidemia is becoming a major health problem in the world recently even in human and companion animal clinic.

Keywords: Lipids, Hyperlipidemia, High fat diet, Cholesterol

INTRODUCTION

Hyperlipidemia is modifiable risk factor for atherosclerosis and related cardiovascular diseases, including coronary heart disease, cerebral stroke, myocardial infarction and renal failure are becoming a major health problem in the world recently [1]. These lipids include cholesterol, cholesterol esters, phospholipids and triglycerides. Increased levels of LDL are related to the development of atherosclerosis [2,3]. HDL plays an important role in removing cholesterol from tissues and protecting against cardiovascular disease.

Jacobson [3] reported that hyperlipidemia refers to elevated levels of lipids and cholesterol in the blood and it is also identified as dyslipidemia, to describe the manifestations of different disorders of lipoprotein metabolism. The term hyperlipidemia refers to increased concentrations of lipids (triglycerides, cholesterol or both) in the blood stream, increased blood concentrations of triglycerides referred to as hypertriglyceridemia, while increased blood concentrations of cholesterol are referred to as hypercholesterolemia [1,4-6]. Another related condition, dyslipidemia indicates disorders of lipoprotein metabolism, including lipoprotein overproduction or deficiency. These disorders may manifest with the elevation of serum total cholesterol, Low-Density Lipoprotein (LDL), triglyceride concentrations and a decrease in the High Density Lipoprotein (HDL) concentration. The main aim of treatment hyperlipidemia is to reduce the risk of developing ischemic heart disease, cardiovascular and cerebrovascular disease.

REASON OF HYPERLIPIDEMIA

Dietary intake may not be the major source of cholesterol, of which 80% is synthesized in the body. It may be true that dietary intake affects the amount of total cholesterol somewhat [7], but it can also be synthesized endogenously by the liver and other tissues. Several diseases have been reported to cause hyperlipidemia. Endocrine disease most commonly, canine hyperlipidemia is the result of an endocrine disorder, such as hypothyroidism, diabetes mellitus or hyperadrenocorticism [6,8-10].

Hyperlipidemia can be the result of an inherited disease in certain breeds of dogs [8]. In pets, hyperlipidemia most often occurs as a consequence of some disorder, hyperlipidemia even can also occur spontaneously after a meal of high-fat diet, particularly table scraps [9,10]. Hyperlipidemia is seen most commonly in ponies, miniature horses, and donkeys, and less frequently in standard-size adult horses [11]. In non-ruminants, including primates and man, hyperlipidemia may be increased by dietary manipulations such as feeding excessive cholesterol or fats with high saturated fatty acid content [12-17].

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DISCUSSION

Hyperlipidemia is a major modifiable risk factor for atherosclerosis and cardiovascular disease. Increased levels of LDL are related to the development of atherosclerosis [6,13]. HDL plays an important role in removing cholesterol from tissues and protecting against cardiovascular disease.

Karam [18,19] reported that the hyperlipidemia disease model was constructed successfully in rats by feeding with high fat diet. Causing histopathological changes in liver was partly supported by H&E staining and indicated that a high fat diet accumulated fat in hepatic tissue cells [16]. High fat diet can finally cause fatty liver. That means high fat diet successfully induced hyperlipidemia in rats [17]. Certainly, these changes may be able to be explained in part by the elevated cholic acids. Cholic acid is synthesized in the liver and secreted in the gallbladder or intestine [18].

There are many chemical drugs that could ameliorate hyperlipidemia such as: statins, fibrates, ezetimibe and nicotinic acid, but most of them are expensive and have undesirable effect [19]. Many herbal medicinal products were reported to have a potential to reduce lipid and cholesterol in body and to enhance the safety profile by elevating HDL levels and inhibiting lipid oxidation, such as Berberine which had regulation effect on hyperlipidemia indexes [20-23]. The major portion of the global population in developing countries still relies on botanical drugs to meet its health needs [22]. The attention paid by health authorities to the use of herbal medicines has increased considerably, because herbal medicines they are often only medicine available in less developed areas and because they are becoming a popular alternative treatment in more developed areas [20].

So there are increasing interest in alternative drug for the prevention and treatment of hyperlipidemia. Currently available hyperlipidemic drugs have been associated with a number of side effects. Therefore, now it's important to search for drug that is less toxic, less expensive, which can provide better safety and efficacy on a long term usage.

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