A REVIEW ON HYPERLIPIDEMIA AND MEDICINAL PLANTS

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Abstract :

Hyperlipidemia has been ranked as one of the greatest risk factors contributing to prevalence and severity of coronary heart diseases. Coronary heart disease, stroke, atherosclerosis and hyperlipidemia are the primary cause of death. The elevation of serum total cholesterol and low density lipoprotein (LDL) cholesterol has been reported as a primary risk factor for cardiovascular disease. Hyperlipidemia is a condition when abnormally high levels of lipids i.e. the fatty substances are found in the blood. Hypolipidemic drugs are extensively used as prophylactic agents to prevent such atherosclerosis induced disorders. But these hypolipidemic drugs are not free from adverse effects. Many plant derivatives and domestic remedies have been screened for their hypolipidemic action. Medicinal plants play a major role in hypolipidemic activity. The advantages of herbal medicines reported are effectiveness, safety, affordability and acceptability. 20 medicinal plants have been documented to have significant hypolipidemic action are shown in this review.

Index Terms- *Antihyperlipidemic, medicinalplants, Hyperlipidemia.*

INTRODUCTION

Hyperlipidemia is a condition when abnormally high levels of lipids i.e.the fatty substance are found in the blood. This condition is also called hypercholesterolemia/Hyperlipidemia[1]. Human body is complex machinery and for maintaining the homeostasis of various organ and organ system.Any undesirable change will disturb the balance resulting in diseased state2.Lipids are fats in the blood stream,commonly divided into cholesterol and triglycerides. Cholesterol circulates in the bloodstream and is involved in the structure and function of cells. Triglycerides(TG) are best viewed as energy that is either used immediately or stored in fat cells. TG are manufactured in the liver from the foods or by being absorbed from the intestine[3].Virchow in 19thcentury who identified cholesterol crystals in atherosclerotic lesion and stated that endothelial cell injury initiates atherogenesis[2].In a modification of this hypothesis it was proposed that the endothelium normally influences the behaviour of arterial smooth muscle cells by providing a barrier to the passage of plasma proteins, and that the major effect of haemodynamic or other factors that injure endothelium is to reduce the effectiveness of the barrier[4].Arteries are normally smooth and unobstructed on the inside, but in case of increased lipid level, a sticky substance called plaque is formed inside the walls of arteries. This leads to reduced blood flow, leading to stiffening and narrowing of the arteries. It has been proved that elevated plasma levels of cholesterol and of LDL are responsible for atherosclerosis in man, and epidemiological data suggests that elevated plasma levels of HDL have a protective effect[5].

TYPE	DISORDER	CAUSE	OCCURANCE	ELEVATED
1	Familial lipoprotein lipase deficiency	Genetic	Very rare	Chylomicrons
2a	Familial hypercholesterolemia	Genetic	Less common	LDL
2b	Polygenic hypercholesterolemia	Multifactorial	Commonest	LDL
3	Familial dysbetalipoproteinemia	Genetic	Rare	IDL,Chylomicrons Remnants
4	Hypertriglyceridemia Multifactorial	Genetic	Common	VLDL
5	Familial combined hyperlipidemia	Genetic	Less common	VLDL,LDL

Table 1.TYPES OF PRIMARY HYPERLIPIDEMIA[6]

CAUSES OF HYERLIPIDEMIA

The main cause of hyperlipidemia includes changes in lifestyle habits in which risk factor is mainly poor diet i.e with a fat intake greater than 40 percent of total calories, saturated fat intake greater than 10 percent of total calories; and cholesterol intake greater than 300 milligrams per day or treatable medical conditions[7].The abnormal cholesterol levels are the result of an unhealthy lifestyle including taking high-fat diet and other lifestyle factors like being overweight, smoking heavy alcohol use and lack of exercise. Other factors include diabetes, kidney disease, pregnancy, and an underactive thyroid gland[8].Other illnesses that may elevate cholesterol levels include polycystic ovary syndrome and kidney disease. The higher levels of female hormones like estrogen, have been noted to increase or change cholesterol levels. In addition, drugs like diuretics, beta-blockers and medicines used to treat depression have also been reported to raise cholesterol levels[9]. Another modifying factors in the development and progression of hyperlipidemia are age and gender. It has been shown that cholesterol levels rise as the person gets older[10-12]

Heredity has also been a modifying factor for the progression of hyperlipidemia as it has been noted that the genes partly determine the amount of cholesterol body makes.[13]

Table 2. PLANTS WITH ANTIHYPERLIPIDEMIC ACTIVITY[13-31]

SERIAL No.	BOTANICAL NAME	FAMILY	PARTS USED
1	Amaranthus Spinosus	Amaranthaceae	Leaves
2	Glycyrrhiza Glabra60	Fabaceae	Root
3	Withania Somnifera	Solanaceae	Root
4	Chlorophytum Borivilianum	Liliaceae	Root
5	Moringa oleifera	Moringaceae	Leaves,root,seeds
6	Sphaeranthus indicus	Asteraceae	Flower heads
7	Rhinacanthus nasutus	Acanthaceae	Whole plant
8	Pithecellobium Dulce benth	Leguminosae	Fresh leaves
9	Hibiscus cannabinus	Malvaceae	Fresh mature leaves
10	Sapindusmemarginatus	Sapindaceae	Pericarp
11	Eclipta prostrata	Asteraceae	Plant juice
12	Sesbania grandiflora	Fabaceae	Leaves
13	Lycium barbarum	Solanaceae	Fruit
14	Ougeinia oojeinensis	Fabaceae	Bark
15	Randia dumetorum	Rubiaceae	Fruit
16	Luffa aegyptiaca	cuccurbitaceae	Fruit
17	Bauhinia purpurea	Fabaceae	Leaves
18	Psidium guajava	Myrtaceae	Leaves
19	Crotalaria juncea	Fabaceae	Leaves
20	Piliostigma thonningii		Leaves

Conclusion: Hyperlipidemia is related to cardiovascular disorder and obesity. Hypolipidemic drugs are extensively used to prevent such disorders, but these drugs have other adverse effects. However, due to adverse side effects, there is a demand for new compounds for the treatment of hyperlipidemia. The potency of herbal drugs is significant and they have negligible side effects than the synthetic hypolipidemic drugs. Patients demand these natural products due to their hypolipidemic activities . In this review 20 drugs shown it's antihyperlipidemic activity, which helps to researchers for further research and advancement.

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