THE RELATIONSHIP OF WATER SOLUBLE DIETARY FIBER (WSDF) STRUCTURE TO PLASMA CHOLESTEROL-LOWERING EFFICACY IN HUMANS.

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No systematic structure-to-function studies on WSDF have been published to date. The purpose of this study was to investigate the plasma cholesterol-lowering efficacy of acacia gum and compare the results with a study we previously published on guar gum, which differs in chemical structure and has an established plasma cholesterol-lowering effect. Acacia gum (*Acacia senegal*), a tree exudate, is a polymer of arabinose, rhamnose, galactose and glucuronic acid. Guar gum (*Cyamopsis tetragonolobus*), a galactomannan, is derived from the guar bean. In this study, 42 male and female adults whose diet, body weight and exercise were held constant were randomly assigned to either a WSDF beverage (15 g acacia gum/day in 3 divided doses) or a placebo beverage to be taken with meals. No change in plasma total cholesterol (TC) or HDL-C, LDL-C or VLDL-C were noted with either the WSDF treatment or placebo. Values are means ± SEM in mg/dl:

	Baseline TC	3 Week TC	4 Week TC
Acacia	265±7	268±7	265±7 (NS)
Placebo	264±5	267±5	266±4 (NS)

We had previously shown that 15 g/day of guar gum consumed in beverage form with meals for 4 weeks by 13 subjects reduced plasma TC from 244±6 mg/dl to 218±6 mg/dl due mainly to a reduction in LDL-C. These data suggest that WSDF chemical structure may be an important factor in plasma cholesterol-lowering efficacy.

COMPLETE DISAPPEARANCE OF XANTHOMAS AFTER LONG-TERM LDL APHERESIS IN AN FH PATIENT

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As known,direct removal of LDL from the plasma by plasmapheresis is an useful method of treatment for FH homozygous patients and for FH heterozygotes resistant to drug therapy.Here we report on the complete disappearance of tendon and tuberous xanthomas,and xanthelasmas,after long-term LDL apheresis therapy in an FH patient.The patient is a woman aged 24 yr who had a positive pedigree for FH,xanthomatosis since the age of 10,and total plasma cholesterol (TC) levels of 650 mg/dl in 1985,when she was referred to our center.Pharmacological therapy with Cholestyramine (16g/day) plus Fenofibrate (300mg/day) caused a decrease in TC of about 20%,while the xanthomata progressively increased in volume.In June 1988 we started LDL apheresis therapy,with the double filtration method,which was repeated fortnightly,and caused a mean decrease in TC of about 50%,and a progressive reduction of the xanthomata;in particular after 1 year of therapy we observed a reduction of the Achilles tendon thickness, measured by ultrasonography,of 38%.Since December 1989 we used a more selective LDL apheresis method,i.e. a dextran sulphate cellulose column plasmapheresis,which causes decreases in plasma total and LDL-cholesterol of 60% and 70% respectively.Moreover we observed a complete regression of xanthelasmas and tuberous xanthoma,and a normalization of Achilles tendon thickness by ultrasonography.
We conclude that a remarkable and permanent decrease in total and LDL-cholesterol induced by periodical LDL apheresis,causes a reduction of the slowly exchangeable cholesterol pool,and,consequently, a reduction in the xanthoma volume and,perhaps,in vascular lesions.

EFFECT OF GLYCOSAMINOGLYCANS (GAGs) ON CLINICAL SYMPTOMATOLOGY FIBRINOGEN LEVELS IN PATIENTS AFFECTED BY POAD.

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There are rising evidences that impaired fibrinolytic potential with increased plasma fibrinogen (F) could be related to development of peripheral obstructive arterial disease (POAD).
In a multicentre study 173 patients with clinically diagnosed POAD (130 stage II, 43 stage III Fontaine) have been evaluated for the presence of increased plasma F levels and other possible risk factors p.e. total cholesterol (TC) and triglycerides (TG). Among these patients, 83 (48%) patients had F > 300 mg/dl, 68 (57.6%) had TC > 240 mg/dl, 39 (30.5%) had TG > 200 mg/dl. In these patients we investigated the clinical efficacy and the effect on F concentration of an association of two GAGs, heparan sulfate and dermatan sulfate endowed with antithrombotic and fibrinolytic activities. GAGs were orally administered (50 mg t.i.d.) up to 110 days. The results showed that GAGs treatment increased significantly by about 145% the walking distance and also reduced the high F levels. No significant effects were detected on TC and TG.
The data obtained are consistent with the ipothesis that POAD is closely associated with high plasma F levels.The great improvement of clinical symptomatology could be therefore partially referred to the restored fibrinolytic activity with reduction of high F levels.

THE EFFECT OF THREE DOSES OF A WATER SOLUBLE DIETARY FIBER (WSDF) MIXTURE ON PLASMA CHOLESTEROL IN HUMANS.

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We had previously shown that a mixture of psyllium husk, pectin and guar and locust bean gums (15 g/day WSDF) consumed in beverage form with meals significantly lowered elevated plasma total cholesterol (TC) and LDL-C levels. The purpose of this study was to determine the dose effect of this WSDF combination. Forty seven male and female adults were randomly assigned to one of 3 fiber beverage (FB) doses: FB1 (5 g/day WSDF), FB2 (10 g/day WSDF), FB3 (15 g/day WSDF), or a placebo (P) beverage (0 g/day WSDF). Subjects consumed the beverages with their main meal(s) for 4 weeks. Diet, body weight and exercise were held constant. The experiment showed a statistically significant ($p<0.001$) trend on TC and LDL-C, with decreases ranging from 2% to 12% for TC and 0% to 18% for LDL-C as daily intake of WSDF from the FB increased from 0 g to 15 g. Data are means in mg/dl. The percent changes from baseline (BSL) are in parenthesis:

	BSL TC	Final TC	BSL LDL-C	Final LDL-C
P	260	255 (-2%)	167	166 (0%)
FB1	254	240 (-6%)	169	155 (-8%)
FB2	258	244 (-5%)	171	160 (-6%)
FB3	274	241 (-12%)	194	159 (-18%)

This study suggests that a combination of psyllium husk, pectin and guar and locust bean gums consumed in beverage form with meals, in doses ranging from 5 g to 15 g/day WSDF, is effective in lowering plasma TC and LDL-C levels.

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ABSTRACT BOOK

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