providers can successfully assist patients in tolerating different statin regimens after multiple rechallenges. Improving patient's adherence to evidence based therapies with statins may help improve their cardiovascular outcomes.

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Rise in Serum Lipids After Dietary Incorporation of "Bulletproof Coffee"

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Lead Author's Financial Disclosures: None
Study Funding: None

Background/Synopsis: Replacing saturated fatty acids (FAs) in the diet with poly- and monounsaturated-FAs may reduce the risk of cardiovascular disease. Recent U.S. Department of Health and Human Services and the U.S. Department of Agriculture dietary guidelines recommend consumption of diets that are low in saturated fat. Dietary trends such as the "Paleo diet" and "bulletproof coffee" promote the consumption of high amounts of saturated FAs. "Bulletproof coffee" is a blend of black coffee and grass-fed butter with brain octane oil (caprylic acid). Advertised as a "healthy" beverage that leads to sustained energy, concentration and weight loss, its ingredients include 2 tbsp of unsalted grass-fed butter, 1 tbsp of brain octane oil mixed with 1 to 2 cups of branded "Bulletproof Upgraded Coffee." Grass-fed butter and brain octane oil include predominantly saturated fats. The effects of "bulletproof coffee" on the lipid profile have not been described in detail. One report describes elevated levels of LDL cholesterol and apolipoprotein B after "bulletproof coffee" consumption. Some suggest "bulletproof coffee" with butter should replace statins.

Objective/Purpose: To describe the effects of "bulletproof coffee" on the lipid profile.

Methods: A 59-year-old male with dyslipidemia who was referred for an acute increase in serum lipids after incorporating "bulletproof coffee" into his diet. The patient has dyslipidemia and his father had coronary artery disease. He was previously on rosuvastatin but had self-discontinued this.

Results: The patient's lipid levels almost doubled after discontinuation of rosuvastatin (Table). He then incorporated 1 to 2 cups of "bulletproof coffee" every day into his diet as an alternative to rosuvastatin therapy. After several months of daily consumption, with stable exercise level, his lipid profile worsened and was advised to stop. Table below depicts this patient's lipid profile while on and off of rosuvastatin therapy and after he started consuming "bulletproof coffee."

Conclusions: We believe that the rise in cholesterol levels of this patient was due to a diet enriched in saturated FAs, mainly resulting from the incorporation of "bulletproof coffee" into the diet. Despite potential changes in dietary recommendations limiting the consumption of saturated FAs, some patients may show worsening lipid profiles, and this may represent a cardiovascular risk factor.

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The Hepatic Effects of Citrus Bergamot Polyphenol Fraction (BPF) on Patients with Non-alcoholic Fatty Liver Disease and Metabolic Syndrome†

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Lead Author's Financial Disclosures: None
Study Funding: None

Background/Synopsis: A highly concentrated extract of Bergamot, a citrus fruit endemic to Calabria, Italy has been shown to be a "natural statin" that is beneficial in patients with dyslipidemia while addressing all the components of the metabolic syndrome. There are no approved drugs or adequate treatment for non-alcoholic fatty liver disease (NAFLD), a disorder considered the "hepatic manifestation" of metabolic syndrome.

Objective/Purpose: To determine whether bergamot polyphenolic fraction (BPF), a proprietary extract from a unique antioxidant rich citrus fruit (bergamot), could significantly improve hepatic structure and function in patients with both metabolic syndrome and non-alcoholic fatty liver disease (NAFLD).

Table.

	Total Cholesterol	LDL-C	HDL-C	Triglycerides	Non-HDL
On rosuvastatin	138	84	43	53	95
Off of rosuvastatin	215	156	44	75	171
On "bulletproof coffee"	285 (+ 33%)	232 (+ 49%)	48 (+ 9%)	63 (- 16%)	237 (+ 39%)

Methods: There were 107 patients who met the NCEP-ATP III criteria for metabolic syndrome and had ultrasonic evidence of severe NAFLD (hepato-renal index 2.5-3.5) after exclusion of alcohol, viral, and immune disorders and were admitted to the study. Before and after 120 days of BPF 650 mg twice/day, all patients had full lipid analysis including lipoprotein fractionation (NMR), fasting glucose, ALT, AST, steato test, γ-GT, TNF-α (ELISA), CRP and ultrasonographic hepatorenal tests.

Results:

Test	Baseline	After 120 days BPF
HEPATIC		
Steato Test:	0.74 ± 0.12	0.44 ± 0.09*
ALT (U/L)	54 ± 5.4	36 ± 5.3*
AST (U/L)	52. ± 6.4	41 ± 5.2*
γ-GT (IU/L)	38 ± 5.2	29.33 ± 1.1*
Hepatorenal index	2.8 ± 0.4	1.5 ± 0.5*
INFLAMMATORY		
Hs-CRP (mcg/dl)	1.2 + 0.8	0.94 + 0.6*
TNF-α (pg/mL)	14.4 ± 1.9	10.7 ± 1.7*

* ($p < 0.05$)

Conclusions: Bergamot polyphenolic extract (BPF) derived from the Calabrian bergamot citrus fruit is a potent anti-oxidant, AMP kinase activator and HMG-CoA reductase inhibitor that has been proven to address all components of the metabolic syndrome. In a group of 107 patients with confirmed NAFLD and metabolic syndrome, BPF given twice per day before meals significantly improved all measured biochemical and ultrasonographic characteristics of NAFLD in 120 days without reported side effects. There was a striking improvement in hepatic function (biochemical) and structure (echogenic visual loss of hepatic fat) accompanied by lower levels of inflammation. As there are no proven therapies for patients with NAFLD and metabolic syndrome, this study suggests that BPF may be a safe and important.

Omega-3 Fatty Acids

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Icosapent Ethyl (Eicosapentaenoic Acid Ethyl Ester): Effects on Remnant-like Particle Cholesterol From the MARINE and ANCHOR Studies†

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Study Funding: This study was funded by Amarin Pharma Inc.

Background/Synopsis: Remnant-like particle cholesterol (RLP-C) represents the cholesterol carried by partially catabolized triglyceride (TG)-rich lipoproteins such as very-low-density lipoproteins (VLDL) in the fasted state and chylomicron remnants in the post-prandial state. Increased RLP-C levels are atherogenic and may increase the risk of atherosclerotic cardiovascular disease. Long-chain polyunsaturated omega-3 fatty acids such as eicosapentaenoic acid (EPA) and docosahexaenoic acid reduce RLP-C levels. Icosapent ethyl (IPE) is a high-purity prescription form of EPA ethyl ester approved to reduce TG levels in adult patients with severe (>=500 mg/dL) hypertriglyceridemia.

Objective/Purpose: To evaluate the effects of IPE on RLP-C levels in patients from the MARINE and ANCHOR studies.

Table RLP-C Levels in Patients From the MARINE and ANCHOR Studies (IPE 4 g/day and placebo groups only)

RLP-C	Baseline Value, mg/dL Median (IQR)	Final Value, mg/dL Median (IQR)	Change From Baseline, Median % (IQR)	Change From Baseline vs Placebo, Median % (*P* value)
MARINE				
IPE 4 g/day n=75	45.0(53.0)	38.0(45.0)	-16.1(86.5)	-29.8(0.0041)
Placebo n=73	47.0(58.0)	58.0(90.0)	14.2(105.4)	—
ANCHOR				
IPE 4 g/day n=82	13.5(6.0)	10.0(6.0)	-24.0(45.5)	-25.8(0.0001)
Placebo n=86	14.0(7.0)	13.0(9.0)	8.0(66.9)	—

Values are presented as medians (IQR or *P* value). Changes vs placebo are Hodges-Lehmann estimates of median treatment differences, and *P* values are from the Wilcoxon rank-sum test. In the ANCHOR study, a subset of the intent-to-treat population was analyzed for RLP-C levels. RLP-C = remnant-like particle cholesterol; IPE = icosapent ethyl; IQR = interquartile range.