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Favorable Cardio-Metabolic Outcomes Following High Carbohydrate Intake in Accordance with the Daniel Fast: A Review of Available Findings

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ABSTRACT

The Daniel Fast is a biblically inspired dietary program rich in carbohydrate, most closely resembling a vegan diet but with additional restrictions, including the elimination of processed foods, white flour products, preservatives, additives, sweeteners, caffeine, and alcohol. While no specific requirements are placed on the ingestion of specific percentages of macronutrients, the mean daily carbohydrate intake is by default approximately 60%, while protein and fat intake are 15% and 25%, respectively. Despite a relatively high carbohydrate intake, multiple favorable cardio-metabolic effects are noted when following the plan, in as few as three weeks. This includes improvements in HOMA-IR, which may be at least in part due to the lower glycemic load and high dietary fiber content of the foods consumed. Other notable changes include reductions in systemic inflammation, total and LDL-cholesterol, oxidative stress, blood pressure, and body weight/body fat. Short and moderate-term compliance to the program is excellent-better than most dietary programs, perhaps due to the *ad libitum* nature of this plan. This paper presents an overview of the Daniel Fast, a carbohydrate-rich dietary program, including relevant findings from both human and animal investigations using this dietary model.

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The Daniel Fast

Background

Dietary interventions designed to favorably impact human health have long been an area of interest for scientists. One such area deals with fasting, which is a pre-determined period of abstinence from all or some foods and/or drinks. Several fasting regimes have been extensively studied for their cardio-metabolic health benefits including caloric restriction, alternate day fasting, intermittent fasting, and dietary restriction; see recent review by Bloomer and Butawan (1). While dietary restriction is not a fasting program by design, caloric intake is typically reduced considerably by default due to the nutrient dense nature of the carbohydrate-rich prescribed foods. We have used with success such a plan in our lab over the past several years, referred to as the Daniel Fast.

The Daniel Fast is a biblically inspired dietary program modeled after the experiment set forth by the prophet Daniel. While being held captive, Daniel refused to defile himself with the royal food and wine; however, the guard did not want to disobey the king and subsequently be punished for Daniel's disobedience. Daniel suggested providing his requested diet of only vegetables (pulse) and water to some of the king's servants for 10 days and then compare their physical condition to those consuming the traditional diet of the king. After 10 days the guard noticed a physical improvement amongst those eating the restricted diet, and so, Daniel and his compatriots were allowed to consume said diet (Daniel 1:8-16).

A later reference of this particular restricted

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diet had Daniel fasting for a period of 21 days (Daniel 10:2-3). Modern day variations of the Daniel Fast are typically undertaken for a period of 21 days and followed by many in an attempt to become closer to God (2). Current adaptations are inspired by the Hebrew translation of Daniel's preferred food 'pulse' which are the seeds of pod-bearing plants. Foods such as these are nutrient dense sources of plant-based protein with many associated health benefits (3).

Food Types and Timing

The modern day Daniel Fast is a stringent high carbohydrate diet that closely resembles an *ad libitum* vegan diet composed of fruits, vegetables, whole grains, nuts, seeds, and oil. Unlike other fasts, the Daniel Fast does not restrain quantity or timing of food intake, but rather, has strict restrictions on the types of foods one can consume. For instance, dieters are not allowed any animal products, processed foods, white flour products, preservatives, additives, sweeteners, flavorings, caffeine, or alcohol. Because the Daniel Fast does not constrain timing of food consumption, effects should primarily be attributed to the daily reduction in overall calorie intake and the nutrient-dense quality of foods consumed during the fasting period. That said, individual specific responses to high carbohydrate diets such as the Daniel Fast likely differ, in part, due to the relative dietary contribution of co-consumed macronutrients–primarily fats (4-6)–and/or genetic components (4, 7, 8). Though the daily macronutrient contribution can vary slightly with the Daniel Fast, on average most calories come from carbohydrate-rich sources similar to other high carbohydrate diets.

Often times, the relative daily energy from carbohydrates varies depending on the reference, with most ranging between 55% and 70%. Similar to the Daniel Fast, these diets are also typically associated with favorable health outcomes including reductions in weight, oxidative stress, inflammation, and cardio-metabolic risk (9-17). However, vegetarian diets may be a cause of concern for conditions such as hyperhomocysteinaemia, protein deficiency, anaemia, decreased creatinine in muscles, and menstrual disruption in women undergoing increased physical activity (18). This risk can be lessened by use of a modified version of the Daniel Fast allowing for a single daily serving of lean meat and skim milk.

On average, individuals typically consume 60% carbohydrates during the Daniel Fast while protein and fats constitute approximately 15% and 25%, respectively. Due to the strict nature of the Daniel Fast, individuals must be very conscientious about all of their food choices with an emphasis on unprocessed, quality carbohydrates.

Quality Carbohydrate Characteristics

More important than the relative daily carbohydrate contribution is the type and quality of carbohydrate ingested. The assortment of carbohydrates can be structurally categorized into two main types: 1) simple carbohydrates comprising monosaccharides and disaccharides or 2) complex carbohydrates encompassing all of the chained and branched oligosaccharides and polysaccharides. As expected, the body's response to these two types of carbohydrates differ based on structure and enzyme capability; and thus, carbohydrates are ranked based on their ability to exhibit a rise in blood glucose, otherwise known as the glycemic index (GI).

The GI was suggested by Jenkins *et al.* in 1981 and is purely a measure of the glycemic response to a particular food or carbohydrate (19). The index does not, however, account for individual-specific parameters as reported by the high glycemic response variability between individuals consuming identical meals (20). Nonetheless, high GI carbohydrates are typically rapidly digested and absorbed, producing robust surges in blood sugar. Diets rich in these carbohydrates are often associated with a number of chronic diseases including obesity, type 2 diabetes, and heart disease (21, 22). Whereas, low GI carbohydrates typically generate a slow but sustained rise in blood sugar (23), while often being associated with more favorable health outcomes (21).

In our present culture, food processing is nearly impossible to avoid, whether foods are merely dried prior to being shipped or undergo a series of steps to prevent spoilage and improve safety and shelf-life (24). Though much literature exists advocating that food processing does not negatively affect nutritional quality (25, 26), many disagree. Depending on the extent, food processing can affectively raise the GI of certain foods (27), most notably grains (28). Therefore, a priority

should be placed on consuming unprocessed carbohydrates when-ever possible.

Food processing can affect the structural composition of one of the most important sources of carbohydrates, dietary fiber (29, 30). Dietary fiber is a low GI, complex carbohydrate with many health benefits (31, 32). Historically, fiber has been most notably known for its ability to reduce the glycemic response, while more recently, it has gained additional attention for its ability to lower cholesterol. These health-enhancing characteristics may be attributed to viscous fibers which can influence the absorption of these molecules (31). Additionally, dietary fiber has beneficial effects on the digestive tract, as fiber bolsters stool weight and improves transit time (31), while some fibers are able to act as prebiotics for the gut microflora (32). Moreover, fiber may be useful as a fuel source for colonic bacteria to produce short chain fatty acids which can be a useful anti-inflammatory agent (33). In any case, dietary fiber represents a high-quality carbohydrate that can be found in an abundant array of whole foods.

In order to maximize health benefits while undertaking a high carbohydrate diet such as the Daniel Fast, one should consider all of the properties mentioned above. For optimal benefits, an emphasis should be placed on carbohydrate foods that are low GI, unprocessed, and fiber-rich. Consuming foods such as these should prevent drastic changes in systemic blood glucose, as well as postprandial hypertri-glyceridemia and oxidative stress, thereby limiting the risk for development or progression of certain chronic disease states.

Common examples of these foods would be pulses such as beans, peas, and lentils which contain numerous beneficial phytochemicals and are high in fiber, low GI, rich in protein, and a significant source of vitamins and minerals (34). Additionally, whole fruits and vegetables are rich sources of vitamins and minerals that are commonly consumed while on the Daniel Fast. The nutrient dense nature of the carbohydrates as well as the overall daily caloric reduction may amplify the health benefits observed with the Daniel Fast.

Health Benefits of the Daniel Fast

Health-enhancing high carbohydrate diets should emphasize consuming low GI, unprocessed, fiber-rich carbohydrates, and thus, the Daniel Fast may be a useful plan in improving human health. We have studied the effectiveness of both a traditional and modified Daniel Fast from a practical and human perspective since 2009. In trials utilizing a modified Daniel Fast, participants were allowed a single daily serving of lean meat and skim milk (17, 35). Though not all measures in each study reached a statistically significant effect, multiple health-specific outcomes were improved to a clinically meaningful extent in as little as three weeks. For purposes of this review, we present all published data that we are aware of specific to the dietary program referred to as the Daniel Fast. Since we are the only lab group that has published on this dietary program, we have been able to include all relevant data. This includes published work done in humans, as well as preliminary data using animals. Table 1 presents these findings.

Table 1. Summary of findings specific to the Daniel Fast

Reference	Trial Duration	Subjects	Outcome Variable	Effect	Comments
12	21 days	N=43; males and females	BW	↔	
			FM	↔	
			FFM	↔	
			SBP	↓	p = 0.007
			DBP	↓	p = 0.03
			HR	↓	Statistically insignificant; p = 0.13
			TC	↓	p < 0.0001
			TAG	↓	Statistically insignificant; p = 0.12
			HDL-C	↓	p = 0.02
			LDL-C	↓	p = 0.0004
			VLDL	↓	Statistically insignificant; p = 0.12
			Glucose	↔	
			Insulin	↓	Statistically insignificant; p = 0.10
			HOMA-IR	↓	Statistically insignificant; p = 0.10
			WBC	↓	p = 0.03
			CRP	↓	Statistically insignificant; p = 0.13

Continuous of Table 1.

13	21 days	N=43; males and females	MDA	↓	p = 0.004
			H2O2	↓	Statistically insignificant; p = 0.074
			TEAC	↑	p = 0.001
			Nox	↑	p = 0.003
			ORAC	↔	
14	21 days	N=22; males and females	BW	↔	
			FM	↔	
			FFM	↔	
			Pre to post SBP	↓	Statistically insignificant; p = 0.07
			Pre to post DBP	↓	p = 0.02
			Pre to post TC	↓	p < 0.01
			Pre to post HDL-C	↓	Statistically insignificant; p = 0.17
			Pre to post LDL-C	↓	p < 0.01
			Pre to post TAG	↔	
			Pre to post AUC TAG	↔	Statistically insignificant; 11% reduction
			Pre to post AUC MDA	↔	Statistically insignificant; 11% reduction
			Pre to post AUC H2O2	↔	Statistically insignificant; 8% reduction
			Pre to post AUC AOPP	↔	Statistically insignificant; 12% reduction
			Pre to post AUC TEAC	↔	
			Pre to post AUC NOx	↔	Statistically insignificant; 37% increase
			Pre to post Nox	↑	p = 0.02
16	21 days	N=39; males and females	BW	↓	p < 0.01
			FM	↓	p < 0.01
			FFM	↓	p < 0.01
			SBP	↓	p = 0.04
			DBP	↓	Statistically insignificant; p = 0.11
			HR	↔	
			TC	↓	p < 0.01
			TAG	↓	Statistically insignificant; p = 0.18
			HDL-C	↓	p < 0.01
			LDL-C	↓	p < 0.01
			VLDL	↓	Statistically insignificant; p = 0.20
			Glucose	↓	p = 0.04
			Insulin	↓	p < 0.01
			HOMA-IR	↓	p < 0.01
			Nox	↑	p < 0.01
			CRP	↓	Statistically insignificant; p = 0.14
			Resistin	↑	p < 0.01

Continuous of Table 1.

17	21 days	N=29; males and females	T: BW	↔	
			T: FM	↔	
			T: FFM	↔	
			T: SBP	↓	Statistically insignificant
			T: DBP	↔	
			T: HR	↔	
			T: TC	↓	p = 0.02
			T: TAG	↔	Statistically insignificant; 22% reduction
			T: HDL-C	↔	Statistically insignificant; 13% reduction
			T: LDL-C	↔	Statistically insignificant; 17% reduction
			T: VLDL	↔	Statistically insignificant; 21% reduction
			T: Insulin	↔	Statistically insignificant; 22% reduction
			T: HOMA-IR	↔	Statistically insignificant; 31% reduction
			T: MDA	↔	Statistically insignificant; 22% reduction
			T: CRP	↔	Statistically insignificant; 40% reduction
			M: BW	↔	
			M: FM	↔	
			M: FFM	↔	
			M: SBP	↔	
			M: DBP	↔	
			M: HR	↔	
			M: TC	↓	p = 0.02
			M: TAG	↔	Statistically insignificant; 11% reduction
			M: HDL-C	↔	Statistically insignificant; 7.6% reduction
			M: LDL-C	↔	Statistically insignificant; 18% reduction
			M: VLDL	↔	Statistically insignificant; 12% reduction
			M: Insulin	↔	Statistically insignificant; 17% reduction
			M: HOMA-IR	↔	Statistically insignificant; 13% reduction
			M: MDA	↔	
			M: CRP	↔	Statistically insignificant; 41% reduction
35	21 days	N=35; males and females	T: BW	↔	
			T: FM	↔	
			T: FFM	↔	
			T: SBP	↓	Statistically insignificant; p = 0.06
			T: DBP	↔	
			T: HR	↔	
			T: TC	↓	Statistically insignificant; p = 0.10
			T: HDL-C	↔	Statistically insignificant; 13% reduction
			T: LDL-C	↔	Statistically insignificant; 20% reduction
			T: VLDL	↔	Statistically insignificant; 6% reduction
			T: Glucose	↔	
			T: Insulin	↔	Statistically insignificant; 33% reduction
			T: HOMA-IR	↔	Statistically insignificant; 31% reduction
			T: MDA	↔	Statistically insignificant; 25% reduction
			T: AOPP	↔	Statistically insignificant; 6% reduction
			T: Nitrate/Nitrite	↔	Statistically insignificant; 7% increase
			T: CRP	↔	
			M: BW	↔	
			M: FM	↔	
			M: FFM	↔	
			M: SBP	↓	Statistically insignificant; p = 0.06

Continuous of Table 1.

			M: DBP	↔	
			M: HR	↔	
			M: TC	↓	Statistically insignificant; p = 0.10
			M: HDL-C	↔	Statistically insignificant; 11% reduction
			M: LDL-C	↔	Statistically insignificant; 10% reduction
			M: VLDL	↔	Statistically insignificant; 4% reduction
			M: Glucose	↔	Statistically insignificant; 5% increase
			M: Insulin	↔	Statistically insignificant;
			M: HOMA-IR	↔	Statistically insignificant;
			M: MDA	↔	
			M: AOPP	↔	
			M: Nitrate/Nitrite	↑	Statistically insignificant; 41% increase
			M: CRP	↔	Statistically insignificant; 21% reduction
36	6 month	N=21; males and females	T: BW	↔	
			T: FM	↔	
			T: FFM	↔	
			T: TC	↔	Statistically insignificant; 11% reduction
			T: TAG	↓	p = 0.002
			T: HDL-C	↔	Statistically insignificant; 1% increase
			T: LDL-C	↔	Statistically insignificant; 13% reduction
			T: VLDL	↔	p = 0.002
			T: Glucose	↔	Statistically insignificant; 14% reduction
			T: Insulin	↔	Statistically insignificant; 19% reduction
			T: HOMA-IR	↔	Statistically insignificant; 42% reduction
			T: CRP	↔	
			M: BW	↔	
			M: FM	↔	
			M: FFM	↔	
			M: TC	↔	Statistically insignificant; 8% reduction
			M: TAG	↓	p = 0.002
			M: HDL-C	↔	Statistically insignificant; 3% increase
			M: LDL-C	↔	Statistically insignificant; 11% reduction
			M: VLDL	↓	p = 0.002
			M: Glucose	↔	Statistically insignificant; 4% reduction
			M: Insulin	↔	Statistically insignificant; 28% reduction
			M: HOMA-IR	↔	Statistically insignificant; 33% reduction
			M: CRP	↔	Statistically insignificant; 43% reduction
37	13 weeks	N=27; 3-4 week old male rats	BW	↓	DF+E, DF, WD+E < WD; p < 0.05
			FM	↓	DF+E, DF < WD+E, WD; p < 0.0001
			TC	↓	DF+E, DF < WD+E, WD; p < 0.05
			TAG	↓	DF+E, DF < WD+E, WD; p < 0.05
			MDA	↓	DF+E < WD
			AOPP	↓	DF+E, DF < WD+E, WD; p < 0.05
			RUN TIME	↑	DF+E > WD+E; p = 0.02
			IL-4	↔	
			IL-1β	↔	
			IL-10	↔	
			TNF-α	↔	
38	13 weeks	N=27; 3-4 week old male rats	LBM	↑	DF+E > WD+E
			Testosterone	↔	

Continuous of Table 1.					
40	13 weeks	N=27; 3-4 week old male rats	Glucose	↓	DF, DF+E < WD, WD+E; p < 0.05
			Insulin	↔	
			HOMA-IR	↓	DF, DF+E < WD, WD+E
41	13 weeks	N=27; 3-4 week old male rats	Liver weight	↓	p = 0.0002; DF vs WD
			Small intestine length	↑	p = 0.0002; DF vs WD
			Small intestine weight	↑	p = 0.0003; DF vs WD
			Small intestine maltodextrinase activity	↓	Statistically insignificant; p = 0.18

AUC: Area Under the Curve
T: Traditional Daniel Fast
M: Modified Daniel Fast

Body Weight/Body Fat

In all human trials dealing with the Daniel Fast, reductions in body weight, fat mass, and fat free mass were reported following a three week or six month dietary intervention (10, 12, 16, 17, 35, 36). In total, 189 participants across all aforementioned studies completed the trials and were included in analyses. Only one study in which participants co-ingested krill oil or placebo revealed statistically significant improvements in these variables (16). These results are consistent with other high carbohydrate trials indicating high carbohydrate diets may not be best for weight loss. That said, our average reported weight loss following the Daniel Fast for a period of three weeks has been 5.5 pounds, while those following the plan for six months noted a 9.0 pound weight loss.

In our lone animal study involving the Daniel Fast dietary plan, rats consuming the Daniel Fast diet for 3 months had significantly lower total body weight and fat mass than rats consuming the typical Western diet (37,38). Young, sedentary male Long-Evans rats consuming a Daniel Fast diet on average gained 312 grams of total body mass while rats consuming a traditional Western diet gained 384 grams. Body composition between groups was also significantly different following the 3-month trial, with Daniel Fast rats having an average body fat percentage of 24.6% versus 33.5% in Western diet fed rats. Additionally, exercise in conjunction with either diet increased the noted change in body mass and final body fat percentage. Results from human and animal studies suggest weight loss and fat loss does indeed occur with a high carbohydrate Daniel Fast diet, but the changes in these measures may not be as striking in humans as compared with some of the very low carbohydrate regimens followed by some.

Blood Pressure

Overall, hemodynamic measurements from human trials suggest both a modified (involving one serving per day of meat and dairy) or a traditional Daniel Fast for a period of three weeks or six months can improve systolic and diastolic blood pressure (10,12,16,17,35,36). The only exception was a very slight rise in systolic blood pressure from a modified Daniel Fast following a three week trial in 13 individuals (17). These studies suggest clinically meaningful reductions in blood pressure are achievable from the Daniel Fast, but as expected, hemodynamic results are variable as in many other dietary intervention studies (39).

Blood Lipids

Results from both three week and six month trials with the traditional and modified Daniel Fast are similar and promising, with reductions observed in fasting total cholesterol, triglycerides, LDL-C, and VLDL (10, 12, 16, 17, 35, 36). One such drawback from consuming this high carbohydrate diet includes a drop in total cholesterol which is so drastic that HDL-C is also reduced. In order to compensate for this downside, the modified Daniel Fast allowed for a single serving of lean meat and skim milk. When tested against the traditional fast, participants in the modified group did not seem to experience the reduction in HDL-C to as great of an extent (17, 35). In fact, in a six month trial, participants in both the traditional and modified groups experienced increases in HDL-C by the end of the trial (36). Additionally, three weeks of the traditional Daniel Fast also seemed to alter the

postprandial hypertriglyceridemia response as seen by the reduction in the area under the curve for triglycerides after ingesting a high fat milkshake (12).

In our animal study, rats fed a Daniel Fast diet for 3 months had significantly lower triglycerides and total cholesterol than rats fed a traditional Western diet (37). Rats consuming the traditional Western diet exhibited plasma triglycerides 6-fold and cholesterol 2- to 3-fold higher than those consuming the Daniel Fast. Results from the above mentioned human and animal studies suggest a Daniel Fast may prevent adverse alterations in blood lipid parameters.

Blood Glucose, Insulin, and HOMA-IR

The effect of this high carbohydrate diet on fasting glycemic biomarkers are not as consistent as those mentioned above. Combined results from a three week traditional Daniel Fast trial with co-ingestion of krill oil or coconut oil (placebo) reported statistically significant reductions in fasting glucose, insulin, and HOMA-IR (16). Other clinically meaningful reductions in fasting glucose, insulin, and HOMA-IR were also observed from three week interventions (10,17) and a six month trial (36). Contrary to these findings, a three week trial with a modified Daniel Fast resulted in a slight but statistically insignificant mean increase in fasting glucose, insulin, and HOMA-IR (35). These inconsistent results may be due to the diverse sample population used in each trial.

Our results from animal studies indicate male rats consuming the Daniel Fast for 3 months had significantly lower fasting plasma glucose. Though not significantly different, this was also accompanied by lower fasting plasma insulin and HOMA-IR levels in Daniel Fast-fed rats. Rats fed the Western diet for 3 months developed insulin resistance as suggested by the HOMA-IR, levels while rats fed the Daniel Fast did not (37,40). Human and animal trials suggest the high carbohydrate, nutrient dense Daniel Fast may have protective effects from the development of insulin resistance.

Blood Oxidative Stress and Antioxidant Capacity

Three week dietary intervention studies with the traditional Daniel Fast resulted in reductions in the lipid peroxidation marker MDA (11, 12, 16, 17, 35); however, two studies utilizing the modified Daniel Fast failed to show changes (17, 35). Additionally, the traditional Daniel Fast also resulted in reductions in hydrogen peroxide (11, 16) and increases in nitrate/nitrite, the metabolites of nitric oxide (11, 12, 16). When comparing the traditional and modified Daniel Fast to a traditional vegan diet, all high carbohydrate diets resulted in increases in nitrate/nitrite (35). Postprandial areas under the curves for hydrogen peroxide and advanced oxidation protein products decreased following ingesting a high fat milkshake, while the area under the curve for nitric oxide metabolites increased pre- to post-fast (12). Results for Trolox equivalent antioxidant capacity were highly inconsistent between trials (11, 12, 16).

Rats fed a Western diet for 3 months have higher levels of MDA and advanced oxidation protein products (AOPP) than rats fed the Daniel Fast diet (37). For example, rats consuming the Western diet resulted in an approximately 8-fold higher level of AOPP, which is a far greater effect than what we observed in humans following a three week intervention. Taken together, human and animal studies suggest a Daniel Fast for at least three weeks may lower oxidative stress.

Blood CRP and Inflammation

Human data regarding the effects of the Daniel Fast on inflammation are limited to the measure of C-reactive protein. All three week and six month trials with both variations of the Daniel Fast result in clinically meaningful reductions in C-reactive protein. Additionally, a three week trial with the traditional Daniel Fast and krill or coconut (placebo) oil also resulted in a statistically significant increase in resistin (16). Rats fed the Daniel Fast diet for 3 months failed to show a statistically significant difference in inflammatory markers as compared to rats fed the Western diet (37).

Physical Performance and Related Variables

To date, the effect of the Daniel Fast on physical performance has only been assessed in animal models. Young rats who were exercise trained and fed the Daniel Fast for 3 months demonstrated a greater improvement from baseline in run time to exhaustion as compared to rats fed a Western diet (37). Specifically,

exercise-trained rats consuming the Daniel Fast for 3 months improved treadmill run time to exhaustion by 23.6 minutes; whereas, exercise-trained rats consuming the Western diet only improved treadmill run time by 12.6 minutes on average. Finally, structural changes within the small intestines of rats fed the Daniel Fast for 3 months have also been shown to be modified by exercise without affecting carbohydrate absorption (41).

Compliance

For any dietary program, perhaps the variable of greatest importance is the individual's ability to comply with the guidelines. Short-term and long-term compliance has been assessed using self-reported measures and checked with dietary logs. Overall compliance to a traditional or modified Daniel Fast is very good with self-reported measures on a scale of 0-100% typically being greater than 95% for a duration of three weeks (10-12, 16, 36, 42). During one study with a longer time course of six months, compliance was reportedly approximately 85% after the 3rd month and approximately 80% after the 6th month (42). These compliance values suggest that both the traditional and modified Daniel Fast may be an effective *ad libitum* dietary approach that can potentially improve overall health.

Conclusion

When consuming a high carbohydrate diet in the pursuit of enhancing overall health, it is important to consume the low GI, unprocessed, fiber-rich carbohydrates such as those required for the Daniel Fast. Short-term and long-term compliance to this type of *ad libitum* dietary intervention is typically very good, with health benefits observed in as little as three weeks. In general, these include reductions in body weight, fat mass, blood pressure, lipids, fasting glucose and insulin, certain pro-oxidant oxidative stress markers, and inflammation. Additional work involving a larger sample of men and women, perhaps with diagnosed cardiovascular or metabolic disease, will help expand our understanding of the potential influence of this high carbohydrate diet on human health.

Conflicts of interest

MB has no conflicts of interest to disclose. RJB is the co-author of the book The Daniel Cure: The Daniel Fast Way to Vibrant Health. Both authors read and approved of the final manuscript.

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