

Title of research study: The Effects of Dietary Fiber on the Gut Microbiome and HDL Particles of Human Subjects

Investigator:

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Why am I being invited to take part in a research study?

We invite you to take part in a research study because you are a healthy volunteer between the ages of 18 and 45 years with a Body Mass Index (BMI - a measure of body composition) between 23-32 kg/m².

What are my rights as a research subject?

(Experimental Subject's Bill of Rights)

- Someone will explain this research study to you, including:
 - o The nature and purpose of the research study.
 - o The procedures to be followed.
 - o Any common or important discomforts and risks.
- Whether or not you take part is up to you.
- You can choose without force, fraud, deceit, duress, coercion, or undue influence.
- You can choose not to take part.
- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you.
- You can ask all the questions you want before you decide.
- If you agree to take part, you will be given a signed and dated copy of this document.

How is this research funded?

This research is being funded by USANA, also called the sponsor. Sponsors may change or be added.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team Jea Woo Kang or Dr. Angela Zivkovic at (530) 752-3973. In the case of an emergency, dial 911 from any phone.

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This research has been reviewed by an Institutional Review Board (IRB). Information to help you understand research is on-line at <http://www.research.ucdavis.edu/policiescompliance/irb-admin/>. You may talk to a IRB staff member at (916) 703-9151, hs-irbadmin@ucdavis.edu, or 2921 Stockton Blvd, Suite 1400, Room 1429, Sacramento, CA 95817 for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get information or provide input about this research.

Why is this research being done?

The purpose of this study is to investigate whether consuming a packet of fiber powder per day changes the composition and/or function of the gut microbiota and high density lipoproteins (HDL) or good cholesterol.

How long will the research last?

We expect that you will be in this research study for up to 13 weeks total. This includes the study procedures which last for 12 weeks, and a week beforehand during which you will complete a 3-day food record, 24-hour diet recall, and bowel movement questionnaire.

How many people will be studied?

We expect about 20 people to complete this research study.

What happens if I say yes, I want to be in this research?

The study will be carried out at the Ragle Human Nutrition Research Center on the UC Davis campus. The address is 1283 Academic Surge, University of California, Davis, in Davis CA 95616. If you decide to participate in this study and are found to be eligible, you will first be asked to schedule a consent visit. We will explain the study to you and answer any questions you have. Once you are enrolled, you will be asked to complete and return a 3-day food record, Bristol stool scale, and bowel movement questionnaire before the first study visit (Study Visit 1). If you are female and you still have a menstrual period, we will ask about your menstrual cycle and schedule your first study visit during the beginning of the follicular phase of your cycle i.e. the first 7-10 days after the start of your period.

Devices and Collection Kits:

You will be given a stool collection kits to be used throughout the course of the study. Stool collection kit is used to collect samples of each bowel movement you experience throughout the course of the study for microbiome analysis.

For each bowel movement, you will use the collection kit to sample a pea sized amount of stool using a sterile collection spatula, transfer this sample to a sterile tube until the stool sample fills the yellow tube top, seal the sample with the purple cap, shake the sealed tube vigorously for at least 30 seconds, place

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the tube in a small bag, and freeze the sample until it can be delivered to study personnel. Please follow the stool collection protocol for details.

The Dietary Fiber and/or Placebo Packets:

The Dietary Fiber and/or Placebo (no fiber) will be given out as powder form which include mostly dietary fiber (resistant starch, fructooligosaccharide, sugarcane fiber, and inulin), rice flour, xanthan gum, and fruit powders. The Dietary Fiber and/or Placebo packet will contain a total of 12 g/serving of powder, which you will be asked to consume a packet per day following your timeline. You will be given a plastic shaker bottle to mix the powder with the given beverage of choice.

Whether you start with the Dietary Fiber or Placebo will be chosen by chance, like flipping a coin. Neither you nor the study doctor will know which powder you get first. But during the course of the study you will take both the Dietary Fiber and the Placebo each for 4 weeks.

Enrollment and Consent Visit

A week before the study, you will report to the Ragle Human Nutrition Research Center located on the UC Davis campus (1283 Academic Surge, University of California, Davis, in Davis CA 95616) for enrollment in the study. Your eligibility will be again confirmed against inclusion and exclusion criteria. You will be given ample opportunity for questions about the study and their participation in it before providing your consent and enrollment. After consent has been provided you will then fill out a health history questionnaire and the iPAQ physical activity questionnaire, as well as providing a 24-hour diet recall. You will be given materials and instructions for maintaining a consistent diet and recording its contents daily during the 3 days leading up to the first study visit. You will also be provided materials and instructions for stool sample collection on the **3rd day** of diet tracking before the first study visit. The schedule of all seven study visits will be confirmed.

- Participants do: check eligibility, consent and enrollment, health history questionnaire, iPAQ physical activity questionnaire, 24-hour diet recall, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire

Study Visit 1 (Part A Start)

On your first clinic visit, you will be asked to arrive at the Ragle Human Nutrition Research Center between 7:00-9:00am after an **12-hour overnight fast** (no food or beverage, except water) from 7:00-9:00pm the night before.

We will first collect all the questionnaires, 3-day food diary, and stool samples from day before. We will then measure your height, weight, and blood pressure. You will also have a blood draw of about 3.5 tablespoons (50.5 mL). In addition, you will be asked to complete questionnaires about general health.

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You will be given a stool collection kit to be used on a day before the next visit. Fiber/placebo supply (2week) packet will also be given out. Finally, you will be given a 3-day food diary to record your food and beverage intake throughout the rest of the day along with tips on how to keep a consistent and accurate food record. You will also be given Bristol stool scale and bowel movement questionnaire. This visit will take about an hour.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample
- Participants do: blood draw (**12-h overnight fast**), height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, fiber/placebo supply (2week), \$25 gift card

Study Visit 2 (Part A Midpoint)

On day 14 of the study protocol you will report to the Ragle Human Nutrition Research Center located on the UC Davis campus (1283 Academic Surge, University of California, Davis, in Davis CA 95616) on your scheduled date and time.

We will collect all the questionnaires, 3-day food diary, stool samples from day before, and **empty** fiber/placebo packets. In addition, you will be asked to complete questionnaires about general health. We will then measure your height, weight, and blood pressure.

You will be given a stool collection kit to be used on a day before the next visit. Fiber/placebo supply (2week) packet will also be given out. Finally, you will be given a 3-day food diary to record your food and beverage intake throughout the rest of the days along with tips on how to keep a consistent and accurate food record. You will also be given Bristol stool scale and bowel movement questionnaire. This visit will take about half an hour.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample, **empty** fiber/placebo packets
- Participants do: height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, fiber/placebo supply (2week), \$25 gift card.

Study Visit 3 (Part A End/Washout Period Start)

On day 28 of the study protocol you will report to the Ragle Human Nutrition Research Center located on the UC Davis campus (1283 Academic Surge, University of California, Davis, in Davis CA 95616) between 7:00-9:00am after an **12-hour overnight fast** (no food or beverage, except water) from 7:00-9:00pm the night before.

We will collect all the questionnaires, 3-day food diary, and stool samples from day before, and **empty** fiber/placebo packets. We will then measure your height, weight, and blood pressure. You will also have a blood draw of about 3.5 tablespoons (50.5 mL). In addition, you will be asked to complete questionnaires about general health.

You will be given a stool collection kit to be used on a day before the next visit. Finally, you will be given a 3-day food diary to record your food and beverage intake throughout the rest of the days along with tips on how to keep a consistent and accurate food record. You will also be given Bristol stool scale

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and bowel movement questionnaire. You will be given suggestions on how to best maintain your normal diet/exercise throughout the washout period. This visit will take about an hour.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample, **empty** fiber/placebo packets
- Participants do: blood draw (**12-h overnight fast**), height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, instructions about maintaining their normal diet/exercise throughout the washout period, \$25 gift card

Study Visit 4 (Washout Period Midpoint)

On day 42 of the study protocol you will report to the Ragle Human Nutrition Research Center located on the UC Davis campus (1283 Academic Surge, University of California, Davis, in Davis CA 95616) on your scheduled date and time.

We will collect all the questionnaires, 3-day food diary, stool samples from day before. In addition, you will be asked to complete questionnaires about general health. We will then measure your height, weight, and blood pressure.

You will be given a stool collection kit to be used on a day before the next visit. Finally, you will be given a 3-day food diary to record your food and beverage intake throughout the rest of the days along with tips on how to keep a consistent and accurate food record. You will also be given Bristol stool scale and bowel movement questionnaire. This visit will take about half an hour.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample
- Participants do: height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, \$25 gift card

Study Visit 5 (Part B Start)

Procedure same as Visit 1. Please refer to 'Study Visit 1' for details.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample
- Participants do: blood draw (**12-h overnight fast**), height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, fiber/placebo supply (2week), \$25 gift card

Study Visit 6 (Part B Midpoint)

Procedure same as Visit 2. Please refer to 'Study Visit 2' for details.

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- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample, **empty** fiber/placebo packets
- Participants do: height/weight/blood pressure measurement, health questionnaire, confirm schedule of all upcoming appointments and at-home activities
- Participants leave with: new stool sample kit, 3-day diet record form, Bristol stool scale and bowel movement questionnaire, fiber/placebo supply (2week), \$25 gift card

Study Visit 7 (Part B End/Study End)

Procedure same as Visit 3. Please refer to 'Study Visit 3' for details.

- Participants bring: stool sample from day before, Bristol stool scale and bowel movement questionnaire, diet record from 3 days leading up to stool sample, **empty** fiber/placebo packets
- Participants do: blood draw (**12-h overnight fast**), height/weight/blood pressure measurement, health questionnaire
- Participants leave with: final gift card of \$50

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Timeline Description:

Week/s	Visit	Purpose	Questionnaires	Food Record	Blood draw	Stool sample	Empty Packet
-7	Screening visit	<ul style="list-style-type: none"> To determine eligibility; obtain informed consent To collect questionnaires, and 24-hour diet recall 	<input type="checkbox"/>	<input type="checkbox"/>			
0	#1 Part A Start	<ul style="list-style-type: none"> To collect stool samples, questionnaires, and 3-day diet recall To do blood draw and to measure height, weight, and blood pressure To give out fiber/placebo supply, stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	#2 Part A Midpoint	<ul style="list-style-type: none"> To collect stool samples, questionnaires, 3-day diet recall, and empty packet To measure height, weight, and blood pressure To give out fiber/placebo supply, stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4	#3 Part A End/ Washout Period Start	<ul style="list-style-type: none"> To collect stool samples, questionnaires, 3-day diet recall, and empty packet To do blood draw and to measure height, weight, and blood pressure To give out stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	#4 Washout Period Midpoint	<ul style="list-style-type: none"> To collect stool samples, questionnaires, and 3-day diet recall To measure height, weight, and blood pressure To give out stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
8	#5 Part B Start	<ul style="list-style-type: none"> To collect stool samples, questionnaires, and 3-day diet recall To do blood draw and to measure height, weight, and blood pressure To give out fiber/placebo supply, stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10	#6 Part B Midpoint	<ul style="list-style-type: none"> To collect stool samples, questionnaires, 3-day diet recall, and empty packet To measure height, weight, and blood pressure To give out fiber/placebo supply, stool sample kit 	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
12	#7 Part B End/	<ul style="list-style-type: none"> To collect stool samples, questionnaires, 3-day diet recall, and empty packet To do blood draw and to measure height, 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Study End	weight, and blood pressure					
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What are my responsibilities if I take part in this research?

If you take part in this research, you will be responsible to keep your normal diet with low fiber content, defined as less than approximately 15g/day, or equivalent to approximately 4 servings of fruit, vegetable, legume, or whole grain combined per day. You also need to keep all the visits until the endpoint of the study and provide all the questionnaires and biological samples as instructed under your consent.

What happens if I do not want to be in this research?

You may decide not to take part in the research and it will not be held against you.

What happens if I say yes, but I change my mind later?

You can leave the research at any time and it will not be held against you. If you decide to withdraw, you will be able to request the destruction of your samples. If the samples have already been tested, those results will still remain as part of the overall research data. If you decide to leave the research, please contact the principal investigator or study coordinator.

Is there any way being in this study could be bad for me?

There is a chance of temporary discomfort, bruising, or very rarely, an infection at the site where blood was drawn. Precautions will be taken to minimize these risks including use of skilled phlebotomists and nurses, and aseptic/sterile techniques.

There may be risks of sustained moderate to severe gastrointestinal discomfort or diarrhea. If moderate to severe gastrointestinal discomfort or diarrhea lasts more than 2 days you will be dropped out from the study as safety endpoint measures.

There may also be risks to your confidentiality. The research staff will store study records and other information about you in a secure location and will grant access only to those with a need to know.

However, just like personal information kept by your health care providers, your banks, and others, even these safeguards cannot guarantee absolute protection of the data. If confidential information gets into the wrong hands, it can cause harm. Although rare, there are reported cases of breaches that have resulted in discrimination in insurance or employment.

For more information about risks, please ask the study coordinator.

Will being in this study help me in any way?

Possible benefits for you include learning how your clinical blood values and gut microbiota change in response to a fiber supplementation. You will also receive detailed information about the nutritional breakdown of your food record. The study will benefit others by contributing to our scientific

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knowledge on the relationship between fiber supplementation and the human microbiome and HDL composition and function.

What happens to the information collected for the research?

Efforts will be made to limit use or disclosure of your personal information, including research study and medical records, to people who have a need to review this information. We cannot promise complete confidentiality. Organizations that may inspect and copy your information include the IRB and other University of California representatives responsible for the management or oversight of this study.

The sponsor, Usana, will receive data in the form of progress reports and manuscripts which will be published in peer-reviewed journals. All data will be de-identified.

We will not be including your name on this study, and instead only subject ID numbers will be used. Therefore, none of the information will be linked to your electronic medical record (EMR).

Specimens such as blood and fecal samples taken from you for this study will become the property of the University of California. The specimens may be used in this research, may be used in other research, and may be shared with other organizations. The specimens could lead to discoveries or inventions that may be of value to the University of California or to other organizations. Under state law you do not have any right to money or other compensation stemming from products that may be developed from the specimens.

If you agree to share the blood and fecal sample(s) collected from you, please initial here. _____

Otherwise, your blood and fecal samples will be destroyed at the end of this study.

The sponsor, monitors, auditors, the IRB, the Food and Drug Administration will be granted direct access to your research records to conduct and oversee the study. We may publish the results of this research. However, we will keep your name and other identifying information confidential.

A description of this clinical trial will be available on <http://www.ClinicalTrials.gov>, as required by U.S. Law. This Web site will not include information that can identify you. At most, the Web site will include a summary of the results. You can search this Web site at any time.

Can I be removed from the research without my OK?

If you fail to comply with the study protocol, we have the right to remove you from the research study without your approval. Failure to comply with study protocols may include but is not limited to: failure to comply with the fiber powder portion of this study, or refusal to give specimen samples. If you are removed from the study for failure to comply, there will be no further compensation.

What else do I need to know?

There is no charge for you to participate in this study. Neither you nor your insurance carrier will be charged for your taking part in the research. All costs associated with the study will be paid by the sponsor/department.

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If you agree to take part in this research study, we will compensate you \$200 for your time and effort. On each visit, you will be provided pro-rated compensation: \$25 for completion of Visit 1-6 and then final \$50 upon collection of your final blood and stool samples at Visit 7. Compensation will be in the form of gift cards. You may be asked for your social security number for payment purposes. It will not be used for any other purpose without your permission.

Bio-specimens (such as blood, tissue, or saliva) collected from you for this study and/or information obtained from your biospecimens may be used in this research or other research, and shared with other organizations. You will not share in any commercial value or profit derived from the use of your biospecimens and/or information obtained from them.

Are there other research opportunities?

If you are interested in being contacted for future research, please provide your phone number and/or email. This is completely optional.

_____(initials) Yes, I am willing to be contacted for future research opportunities. My phone number and/or email is: _____.

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Signature Block for Capable Adult

Your signature documents your permission to take part in this research.

Signature of subject

Date

Printed name of subject

Signature of person obtaining consent

Date

Printed name of person obtaining consent

My signature below documents that the information in the consent document and any other written information was accurately explained to, and apparently understood by, the subject, and that consent was freely given by the subject.

Signature of witness to consent process

Date

Printed name of person witnessing consent process

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