Informed Consent Document

Title of the Study: Bioavailability of aronia berry polyphenols

Formal Study Title: Optimizing the bioavailability and metabolism of aronia berry polyphenols for improving gut health

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Lead Researcher: Bradley W. Bolling, 608-890-0212
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UNIVERSITY OF WISCONSIN-MADISON
CONSENT TO PARTICIPATE IN RESEARCH

Title of the Study: Bioavailability of aronia berry polyphenols

Formal Study Title: Optimizing the bioavailability and metabolism of aronia berry polyphenols for improving gut health

Lead Researcher: Bradley W. Bolling, PhD (phone: (608) 890-0212) (email: bwbolling@wisc.edu)

Where Lead Researcher Works: Department of Food Science

Invitation

You are invited to participate in a research study to better understand how the human body metabolizes aronia berry polyphenols. You have been asked to participate because you are a healthy adult and meet other study participation requirements discussed during the online survey.

The purpose of this consent form is to give you the information you need to decide whether to be in the study. Ask questions about anything in this form that is not clear. If you want to talk to your family and friends before making your decision, you can. Once we have answered all your questions, you can decide if you want to be in the study. This process is called “informed consent.”

Why are researchers doing this study?

The purpose of the research is to understand how the body breaks down and uses food that contains aronia berry phospholipid-polyphenols (PLP), aronia extract, and whole aronia berry. We think that the PLP might get more polyphenols to your gut compared to the other forms of delivery. Polyphenols include natural plant pigments that have been shown to have health-promoting properties. This study can help scientists better understand how dietary polyphenols are metabolized by the human gastrointestinal system.

This study will include 15 healthy adults.

This research study will take place in the Department of Food Science at the University of Wisconsin-Madison campus in Madison, WI.

This study is funded by the Office of the Vice Chancellor for Research and Graduate Education, at University of Wisconsin-Madison.

Why are some reasons I might – or might not – want to be in this study?

You may want to be in this study if you are:	You might NOT want to be in this study if you:
• Comfortable having researchers measure your weight and height • Comfortable providing urine and fecal samples for four separate 24-hour durations • Willing to make dietary modifications suggested by study personnel for four separate 24-hour durations • Interested in contributing to scientific knowledge even though you might not benefit directly from the study	• Are nervous about giving urine and fecal samples • Won't be able to take time off work to go to all the study visits • Unwilling to temporarily avoid consuming certain polyphenol-rich foods and beverages such as coffee, teas, cocoa products and berries

What will happen in the study?

If you decide to participate in this research, you will complete a brief questionnaire to determine eligibility and allow the study team to measure your height and weight. You may skip any question on the questionnaire that you do not wish to answer. This visit is expected to take approximately half an hour.

If you are eligible to participate further, you will begin by completing a six-day wash-in phase. During this phase, no dietary intervention is given but you will have some dietary restrictions. These restrictions will start 24 hours before each visit through the intervention period (48 hours total). We will ask you to avoid consuming certain polyphenol-rich foods and beverages (listed below) and dietary supplements that contain plant polyphenols. Additionally, you will need to avoid vigorous exercise during this time.

Polyphenol-rich foods:

- **Cocoa products:** dark chocolate, milk chocolate
- **Berries:** aronia berry (chokeberry), elderberry, blueberry, black currant, strawberry, blackberry, raspberry
- **Other fruits:** plum, cherry, prune, black grape, apples
- **Seeds:** flaxseed, chestnut, hazelnut, pecan nut, almond
- **Vegetables:** black olive, black beans, green olive, artichoke hearts, red chicory, spinach, shallot, kale
- **Beverages:** coffee, black tea, green tea, red wine, apple juice, pomegranate juice, chocolate (cocoa) drinks, orange juice, cranberry juice, other berry juices, hibiscus tea.

At the end of the wash-in period, you will come to the study center (Babcock Hall, 1605 Linden Dr, Madison, WI) for the first intervention visit. You will first empty your bladder. You will then consume one serving of an applesauce-based intervention food, provided by the study personnel.

After consuming the study food, we will provide you with a plastic urine collection container to take with you to deposit all specimens of urine throughout the next 24 hours. We will also give you a fecal collection kit to take as well. However, you will wait to collect your fecal sample until at least 12 hours since your intervention visit. . A cooler with cold packs will be provided to you for the transportation and storage of all your samples. You will return to the study center the next day to drop off the cooler that contains your urine and fecal samples for further polyphenol analysis.

There will be a total of four scheduled intervention periods for this study, all of which will follow the same procedure for collecting the same samples. Each intervention visit is expected to take ~20-30 minutes and each drop off visit is expected to take ~five minutes.

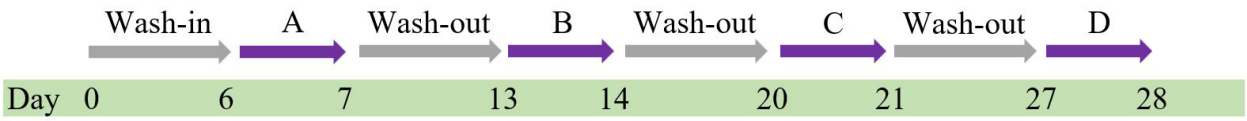
In the meantime, throughout a total of 24 hours immediately starting after your sampling time, you will consume only commercially available frozen and shelf-stable low-polyphenol meals and snacks provided by the study personnel. Insulated bags will be provided to you for transport of frozen meals. The low-polyphenol diet and snacks will consist of dairy products, meat, low-phenolic snacks (e.g., banana, potato chips) and starch sources (e.g. white bread, rice, and plain bagels). You may drink an unlimited amount of water over the time course.

After we have received both your urine and fecal samples, you will begin a six-day wash-out phase. The wash-out phase will occur in the same manner as the wash-in phase starting 24 hours before the next intervention visit.

This process will repeat until all four intervention visits are completed over the course of 28 days total (see picture below)

Prior to all intervention visits, we ask that you fast overnight for at least 12 hours.

Study Overview



In total, there are four types of intervention foods that are made with whole aronia berry powder (A), aronia berry extract (B), phospholipid-polyphenol (C) and a low-polyphenol control (D). You will not know which intervention food you are receiving during each intervention period. Also, the order of intervention foods (A-D) will be randomized in the order in which you will receive each one upon study enrollment. Wash-in and wash-out periods are six days long, and food consumption and sampling durations are 24 hours.

During the course of the study we also ask that you maintain your normal diet and exercise pattern, except for the restrictions specified above (e.g. consuming the study foods, avoiding polyphenol-rich foods, beverages and dietary supplements, exercising 24 hours before and after the start of intervention periods).

During the course of the study, we ask that you inform us if you are no longer eligible to participate, though you will not be asked to provide the specific reason (e.g. pregnancy or trying to become pregnant, change in health status).

How long will I be in this study?

You will be part of the study for about one month. You will come to Babcock Hall for 9 visits over a period of 4 weeks, including the first screening visit (~30 minutes), four intervention visits (~20-30 minutes each), and an additional 4 short visits to return biological samples the days after intervention visits.

The researchers may take you out of the study, even if you want to continue, if

- your health changes and the study is no longer in your best interest
- you do not follow the study rules or no longer meet the requirements to be in the study
- the study is stopped by the sponsor or researchers

Do I have to be in the study? What if I say "yes" now and change my mind later?

No, you do not have to be in this study. Taking part in research is voluntary. This means that you decide if you want to be in the study. If you decide now to take part, you can choose to leave the study at any time.

If you decide to be in the study, the researchers will tell you about new information or changes in the study that may affect your health or your willingness to continue in the study.

Let the researchers know if you choose to leave the study.

If you decide not to take part in the study, or if you choose to leave the study, your choice will not affect any treatment relationship you have with healthcare providers at UW-Madison, UW Health or any affiliated organizations, or any services you receive from them. No matter what decision you make, and even if your decision changes, there will be no penalty to you. You will not lose medical care or any legal rights.

Are there any risks to me?

There is a risk that your information could become known to someone not involved in this study.

You may be inconvenienced or feel discomfort in providing urine and fecal samples. The overnight fasts before collection visits may cause you to feel hungry, uncomfortable, or result in hypoglycemia (low blood sugar). Refraining from smoking or nicotine use before collection visits could also cause discomfort or withdrawal symptoms (cravings, headaches, nausea, anxiety, irritability, difficulty concentrating, tingling in the hands or feet). Consuming the study foods could result in weight gain or loss.

The risks of allergic reaction to a component in the intervention foods are rare, but potentially serious. If you experience any swelling and itching of oral mucosa in throat, lips, itching in the eyes, you may be having an allergic reaction. You may also experience mild gastrointestinal distress from the consumption of intervention foods. In addition, you may dislike the flavor of intervention foods and/or the low-polyphenol diet and snacks provided by the study personnel at each intervention visit.

Berry-based foods may have interactions with certain medicines that are affected by grapefruit juice, but this is currently unknown.

Will being in this study cost me anything?

There will be no cost to you for any of the study activities or procedures, other than that you will have to pay for travel to and from the study center. You will not have to pay for parking if you park on campus.

Are there any benefits to me?

Being in this study will not help you directly. Your participation in the study may benefit other people in the future by helping us learn more about how dietary polyphenols are metabolized by the human gastrointestinal system and how the consumption of dietary polyphenols affects chronic disease risk.

How is research different from health care?

When you take part in a research study, you are helping to answer a research question. Study tests and procedures are not for your health care.

Will I be compensated for my participation?

You will receive up to $200 for participating in this study. If you withdraw prior to the end of the study, you will receive a prorated amount based upon the number of collection visits you have completed, as follows:

Completion of First sample drop off visit: $25
Completion of Second sample drop off visit: $50
Completion of Third sample drop off visit: $75
Completion of Last sample drop off visit: $200

Your information and samples (both identifiable and de-identified) may be used to create products or to deliver services, including some that may be sold and/or make money for others. If this happens, there are no plans to tell you, or to pay you, or to give any compensation to you or your family.

Financial Interest Disclosure:

A member of this research team has a personal interest in or might profit financially from the results of this study. This is called a “conflict of interest.” The University of Wisconsin-Madison manages conflicts of interest so that they do not affect study participants or the quality of the data collected. We are telling you about the conflict of interest in case it affects whether you want to take part in this study.

What will happen to my data and biospecimens after my participation ends?

We will keep your data for at least seven years and biospecimens for five years. Keeping data or biospecimens for future research is called “banking.” The banked data and biospecimens will be kept in a secure location for use by researchers. The banked data and biospecimens will be labeled with a code number that allows only the members of this research team to identify you.

We will use the data and biospecimens in future research projects about the metabolism of berry components. We may also use them for other types of research. Banked data and biospecimens will not be shared with your health care providers or used in your treatment outside this study. If you decide you no longer want your data and biospecimens banked, you must request in writing to the research team that they be withdrawn.

What happens if I am injured or get sick because of this study?

Being injured during this research is very unlikely. However, accidents can happen.

If you are injured or get sick because of this study, medical care is available to you through UW Health, your local provider, or emergency services, as it is to all sick or injured people.

- If it is an emergency, call 911 right away or go to the emergency room.
- For non-emergency medical problems, contact your regular health care provider.
- Call the Lead Researcher, Bradley Bolling, at 608-265-1494 to report your sickness or injury.

Here are some things you need to know if you get sick or are injured because of this research:

- If the sickness or injury requires medical care, the costs for the care will be billed to you or your insurance, just like any other medical costs.
- Your health insurance company may or may not pay for this care.
- No other compensation (such as lost wages or damages) is usually available.
- UW-Madison and UW Health do not have a program to pay you if you get sick or are injured because of this study.
- By signing this consent form and taking part in this study, you are not giving up any legal rights you may have. You keep your legal rights to seek payment for care required because of a sickness or injury resulting from this study.

How will my confidentiality be protected?

The study staff will keep all study records (including any codes to your data) locked in a secure location. Research records will be labeled with a code and all contents of the research record will be labeled with only that code. A master key that links names and codes will be maintained in a separate and secure location. All electronic files (e.g., database, spreadsheet, etc.) containing identifiable information will be stored on a secure server with password protection to prevent access by un-authorized users. While there will probably be publications as a result of this study, your name will not be used. Only group characteristics will be published.

However, we cannot promise complete confidentiality. Federal or state laws may permit or require us to show information to university or government officials and study sponsors responsible for monitoring this study. These groups will maintain your confidentiality.

We may also have to tell appropriate authorities, such as child protective services or health care providers, if we learn during the study that you or others are at risk of harm (for example, due to child or elder abuse, or suicidal thoughts).

Who at UW-Madison can use my information?

- Members of the research team
- Offices and committees responsible for the oversight of research
- Personnel who handle accounting and billing

- The study sponsor, Office of the Vice Chancellor for Research and Graduate Education at University of Wisconsin-Madison

Who outside the UW-Madison may receive my information?

- Companies or groups performing services for the research team

Will information from this study go in my UW Health medical record?

- None of the information we collect for this study will be put in your medical record.
- Urine and fecal specimens may be sent to researchers outside of the UW-Madison for analysis. Any personal information that could identify you will be removed before the specimens are shared.

A description of this clinical trial will be available on http://www.ClinicalTrials.gov. This website will not include information that can identify you. At most, the website will include a summary of the results. You can search this website at any time.

Will I receive the results of research tests?

Most tests done as part of a research study are only for research and have no clear meaning for health care. In this study, you will not be informed of any test results or unexpected findings.

Whom should I contact if I have questions?

You may ask any questions about the research at any time. If you have questions about the research after you leave today you should contact the Principal Investigator Bradley W. Bolling, PhD at (608) 265-1494.

If you have any questions about your rights as a research participant or have complaints about the research study or study team, call the confidential research compliance line at 1-833-652-2506. Staff will work with you to address concerns about research participation and assist in resolving problems.

We are requesting your email address so we can contact you about scheduling study visits and send reminder emails about study visits. Email is generally not a secure way to communicate about your health as there are many ways for unauthorized users to access email. You should avoid sending sensitive, detailed personal information by email. Email should also not be used to convey information of an urgent nature. If you need to talk to someone immediately, please contact Bradley Bolling, Associate Professor, Department of Food Science at 608-265-1494. You do not have to provide your email address to participate in this study.

□ Yes, you may use email to contact me for this study

□ No, I do not want to be contacted by email.

Agreement to participate in the research study

You do not have to sign this form. If you refuse to sign, however, you cannot take part in this research study.

If you sign the line below, it means that:

- You have read this consent form.
- You have had a chance to ask questions about the research study, and the researchers have answered your questions.
- You want to be in this study.

_____

Printed Name of Participant

_____

Signature of Research Participant Date

_____

Signature of Person Obtaining Consent Date

****You will receive a copy of this form****