

# **PREBIOTICS—WHAT ARE THEY** **AND** **HOW TO USE THEM**

## **INTRODUCTION:**

For decades, the benefits of natural foods have been lauded. It was claimed that Bulgarian peasants all lived to be over a hundred years old because of the health benefits of good bacteria in the yogurt they ate. Like all good myths, there is usually a tiny nugget of truth – this myth, however, has been massively hyped.

## **DEFINITIONS**

Fast forward to the last few decades. We now live in the world of probiotics and prebiotics. Probiotics (with the letter “o”) are supposedly “good bacteria”. Prebiotics (with the letter “e”) are the food that bacteria can eat, so that bacteria are able to thrive.

Prebiotics are foods that contain complex carbohydrates and dietary fibers that cannot be digested in the stomach or small intestine. Once they reach the large intestine, bacteria present in the gut ferment them, and in the fermentation process, produce energy and chemicals that benefit their own existence but also the human host.

On the other hand, according to The United Kingdom National Health Service, probiotics are, *“live bacteria and yeasts promoted as having various health benefits. They’re usually added to yogurts or taken as food supplements, and are often described as “good” or “friendly” bacteria.”*

## DIETARY SOURCES

Prebiotics include foods such as whole grains, fruits, vegetables, beans, legumes, nuts and seeds.

The preferred source of prebiotics is from food products. The majority of food products that act as prebiotics are classified as dietary fiber. A list of 113 prebiotic fiber products can be found at the website, *kramermedicalclinic.com*—Reading References #16 and #49.

Prebiotics also include Polyols and Resistant Starches.

## PREBIOTIC SUPPLEMENTS

At those times when an individual is not able to eat sufficient prebiotic fiber containing foods, prebiotic supplements are available. Listed below are seven prebiotic supplements, i.e. supplements that serve as beneficial nutrients for microorganisms in the digestive tract.

- Jarrow Formulas® Inulin FOS (extracted from Jerusalem artichokes)
- Bare Organics® organic Inulin (extracted from Agave plants)
- Jarrow Formulas® Acacia Gum-Xylooligosaccharide
- NOW® psyllium husk capsules 700 mgm with 50 mg of apple pectin
- Benefiber® powder (wheat dextrin—not to be used by those with celiac disease or wheat sensitivity)
- Holigos® Human Milk Oligosaccharide powder
- Jarrow Formulas XOS-GOS prebiotic chewable tablets

## THE USE OF MULTIPLE PREBIOTICS

Modern scientific findings have not yet provided reliable and reproducible ways to know which microorganisms in the digestive tract will respond to which prebiotic supplement. Therefore, just as

**nutritional experts recommend the ingestion of a wide variety foods in the diet that are rich in prebiotics (at least 30 per week), so a variety of synthetic prebiotics would seem logical when used as substitutes for food items.**

**Since no two individuals have the exact same microbe populations, the use of supplements and selection of food items, must be designed to meet each individual's needs and adjusted frequently based on each individual's response.**

### **POLYPHENOLS**

**Another group of chemicals known as polyphenols are considered prebiotics. Polyphenols have been shown to increase the population of beneficial microbes and also have anti-inflammatory properties.**

**Food products that contain polyphenols include the following:**

- **Fresh apples**
- **Cocoa**
- **Dark chocolate (70% cocoa or higher)**
- **Green tea**
- **Purple grapes**
- **Cranberries**
- **Fresh oranges**
- **Pomegranate and pomegranate juice**

### **RESISTANT STARCH**

**Resistant starches are a class of food products that are also considered prebiotics. Starches are long chains of sugar molecules found in grains, potatoes, and other food products. Some starches are easily digested while others pass through the digestive tract without being metabolized. Those that are difficult to digest are labeled resistant starch.**

**Because resistant starches pass through the small intestine undigested, they enter the large intestine where they serve as nutrients for colon microbes, i.e. prebiotics.**

**Resistant starches can be found in seeds, grains and legumes. They are also found in raw potatoes, basmati rice, and unripe bananas. Potatoes that are cooked and then cooled as well as rice that is cooked and cooled turn into resistant starch through a process called retro gradation.**

### **HUMAN MILK OLIGOSACCHARIDES (HMO)**

**Human milk oligosaccharides (HMOs) are also considered prebiotics. They are a type of complex carbohydrate found in breast milk. They're known as natural digestive nutrients because of their prebiotic properties. HMOs work by selectively nourishing and stimulating the growth of gut bacteria, activating them to thrive. Their benefits in breast milk have long been known to help build and fortify microbes in infants; however, studies now show they can benefit adult gut health as well.**

**Following ingestion, HMOs are minimally digested in the upper gastrointestinal tract. The majority of HMOs reach the large intestine undigested where they act as a nutrient source for the microbial community. They promote the growth of specific bacteria and have the potential to provide health benefits. They have been shown to modulate promote intestinal barrier protection, regulate the immune response, and provide resilience against infection.**

**HMO supplements used in adults do not contain human breast milk but contain carbohydrate fractions that exist in HMOs that support growth of intestinal microbes.**

## A ROTATIONAL PREBIOTIC APPROACH

### WEEK ONE

Each morning take 3 capsules containing psyllium husk 700 mgm with 50 mgm of apple pectin. Take the capsules with two 12 ounce glasses of distilled water (total of 24 ounces). Brew two cups of green tea every day. See Reference # 23 for detailed instructions on how to prepare the green tea. Add 1 teaspoon of Benefiber®, 1 teaspoon of Jarrow Formula® Inulin FOS powder and 1 teaspoon of Manuka honey to the tea. To improve palatability, flavoring with sugar, milk, cream or a coffee creamer and a sprinkle of cinnamon may be added.

### WEEK TWO

Each morning take 3 capsules containing psyllium husk 700 mgm with 50 mgm of apple pectin. Take the capsules with two 12 ounce glasses of distilled water (total of 24 ounces).

Brew two cups of green tea every day. See Reference # 23 for detailed instructions on how to prepare the green tea. Add 1 teaspoon of Benefiber®, 1 teaspoon of Bare Organics® organic inulin, and one teaspoon of Manuka honey.

To improve palatability, flavoring with sugar, milk, cream or a coffee creamer and a sprinkle of cinnamon may be added.

### WEEK THREE

Each morning take 3 capsules containing psyllium husk 700 mgm with 50 mgm of apple pectin. Take the capsules with two 12 ounce glasses of distilled water (total of 24 ounces).

**Brew two cups of green tea every day. See Reference # 23 for detailed instructions on how to prepare the green tea. Add 1 teaspoon of Benefiber®, 1 teaspoon of Jarrow Formulas® Acacia Gum-Xylooligosaccharide, and one teaspoon of Manuka honey.**

**To improve palatability, flavoring with sugar, milk, cream or a coffee creamer and a sprinkle of cinnamon may be added.**

#### **WEEK FOUR**

**Each morning take 3 capsules containing psyllium husk 700 mgm with 50 mgm of apple pectin. Take the capsules with two 12 ounce glasses of distilled water (total of 24 ounces).**

**Brew two cups of green tea every day. See Reference # 23 for detailed instructions on how to prepare the green tea. Add 1 teaspoon of Benefiber® and one teaspoon of Manuka honey. To improve palatability, flavoring with sugar, milk, cream or a coffee creamer and a sprinkle of cinnamon may be added.**

**Chew 3 Jarrow Formulas® XOS-GOS tablets.**

#### **WEEK FIVE**

**Each morning take 3 capsules containing psyllium husk 700 mgm with 50 mgm of apple pectin. Take the capsules with two 12 ounce glasses of distilled water (total of 24 ounces).**

**Brew two cups of green tea every day. See Reference # 23 for detailed instructions on how to prepare the green tea. Add 1 teaspoon of Benefiber®, 1 teaspoon of Jarrow Formula® Inulin FOS powder, 1 powder stick of Holigos HMO® and 1 teaspoon of Manuka honey.**

To improve palatability, flavoring with sugar, milk, cream or a coffee creamer and a sprinkle of cinnamon may be added.

Repeat the 5 week sequence listed above to insure a variety of supplemental prebiotics. Continue to add from the list of food products that also provide a variety of prebiotics.

#### **POTENTIAL SIDE EFFECTS**

Microbes metabolize prebiotics, both synthetic and from the diet, through a chemical process known as fermentation. Fermentation produces intestinal gas which can cause symptoms of bloating, distention and/or flatulence.

As the microbe population and the body adjust to the treatment plan, symptoms should diminish. Until that time, however, adjustments in dosing may be required.

#### **FOR ADDITIONAL ADVICE**

You may obtain additional advice on how to adjust your program by calling the office 352-331-6736 and arranging a telephone consultation with Dr. Kramer.