



Gleukos Ingredients & Additives

Ingredients

Water (H₂O):

- The human body is comprised of roughly 60% water. Consider yourself a leaky bucket; water escapes from the body continuously. You will live about 5 days without water, at best, so drink up.

Dextrose C₆H₁₂O₆:

- Commonly referred to as glucose. Perhaps the most important carbohydrate, it is used as a primary source of energy throughout the biological world; it is transformed into ATP, the cellular energy currency of all animal life. Carbohydrate, in the form of glucose is the body's preferred source of energy during exercise. Glucose requires no *active* digestive process to be absorbed into the bloodstream and is therefore instantaneously assimilated; carbohydrates other than glucose must be dismantled by digestive enzymes, which takes energy and time.

Citric acid (C₆H₈O₇):

- Citric acid is a crystalline, colorless, naturally occurring organic acid. It is responsible for the tart taste of predominately citrus fruits. It is included in the Gleukos mixture for two main reasons:
 1. It is a natural flavoring agent (*natural* meaning citric acid is produced in the body by metabolism; such as the citric acid, Krebs, or TCA cycle). The citric acid cycle is responsible in part for the metabolism of simple carbohydrates; it is one of the main energy-producing series of reactions in the body.
 2. As a major constituent of the citric acid cycle, this flavoring ingredient actually contributes to energy production in the body by providing a key metabolite in the citric acid cycle.

Monopotassium phosphate (KH₂PO₄):

- Included as a buffering agent to control the acidity of the drink (from citric acid).
- A source of potassium (an electrolyte) that is lost with sweating.

Gleukos contains only SODIUM

Salt aka sodium chloride (NaCl):

- Also known as table salt. Sodium and chloride are additional electrolytes, and must be replaced after sweating.

Potassium chloride (KCl):

- Provides additional chloride; potassium is the most abundant electrolyte found inside the cells of the body.
- Has a similar taste to salt, which allows us to use less salt without affecting the unique flavor.

Potassium benzoate

- Added to stabilize the Gleukos formula; it prevents the natural occurrence of changes in the chemical composition of the included ingredients that commonly occurs in beverages. These changes are the result of enzymatic action; potassium benzoate prevents this from occurring, ensuring stability of the formula. Potassium benzoate is generally recognized as safe (GRAS) by the FDA.

Natural flavors:

- These are sourced as extracts or essences derived from plant sources that give each flavor of Gleukos its unique taste.

Single serving: 8.0 fl oz/ 240 ml (2 servings per container)

Potassium: 5% of Recommended Daily Value = 175 milligrams per serving (one RTD contains two servings; total potassium = 350 milligrams.

*The Recommended Daily Value of potassium is 3,500 milligrams.

Sodium: 40 mg

Additives

Gleukos Additives Data Sheet

1. Potassium benzoate / Benzoic acid potassium salt

Classified as a 'Synthetic preservative' (synthetic product)

- **Origin:** Benzoic acid, benzoates and benzoic acid esters are commonly found in most fruits, especially berries. Cranberries are a very rich source of benzoic acid. In addition to fruits, benzoates occur naturally in mushrooms, cinnamon, cloves and some dairy products (as a result of bacterial fermentation). *For commercial purposes, it is prepared chemically from toluene.*
- **Function & characteristics:** Benzoic acid and benzoates are used as preservatives against both yeasts and bacteria in acidic products. They are not very effective against fungi, and ineffective in products with a pH above

- 5 (slightly acidic or neutral). High concentrations lead to a sour taste, which limits the application. Benzoates are often preferred, due to better solubility.
- **Products:** Benzoic acid and benzoates are used in a wide range of acid or slightly acidic products.
 - **Daily intake:** Up to 5 mg/kg body weight.
 - **Side effects:** No side effects in the concentrations used. In some people benzoic acid and benzoates may liberate histamine and thus cause pseudo-allergic reactions.
 - **Dietary restrictions:** None – benzoic acid and benzoates can be consumed by all religious groups, vegans and vegetarians.

2. Monopotassium (dihydrogen) phosphate

Classified as a 'buffer' (natural product)

- **Origin:** Potassium salts of phosphoric acid. Normal constituent of the body. Commercially produced from phosphoric acid, which is produced from phosphate mined in the US
- **Function & characteristics:** Potassium phosphate is an acidity regulator and chelating agent (used to bind metal ions). It prevents desiccation and is used as an acid stabilizer in powders as well as to prevent formation of clumps. It increases the activity of antioxidants.
- **Products:** Numerous different types
- **Acceptable Daily Intake:** Up to 70 mg/kg bodyweight.
- **Side effects:** Phosphates are normal essential salts for the body. Their use is limited, as they bind up calcium readily. They have no side effects.
- **Dietary restrictions:** Phosphoric acid and phosphates can normally be consumed by all religious groups, vegans and vegetarians. Although animal bones are mainly made up of phosphates, commercial phosphate is not made from bones.

3. Potassium chloride

Classified as a 'Salt substitute' (natural product)

- **Origin:** Natural salt, part of sea salt and rock salt.
- **Function & characteristics:** Salt replacer
- **Products:** Many salt-free/sodium-free/low-sodium products
- **Acceptable Daily Intake:** None determined.
- **Side effects:** None known.
- **Dietary restrictions:** All religious groups, vegans and vegetarians can use potassium chloride

4. Citric acid

Classified as an 'Acidity regulator' (natural product)

- **Origin:** Citric acid is a compound found in every living organism, as it is part of the key metabolic pathways in all body cells. Large concentrations are

found in citrus fruits, kiwi, strawberries and many other fruits. It is commercially prepared by fermentation of molasses with the mould *Aspergillus niger*.

- **Function & characteristics:** Citric acid has many functions – it enhances the activity of many antioxidants, but is no antioxidant by itself. It is mainly used as an acidity regulator as well as aroma compound. It increases gel strength in marmalades and decreases enzymatic browning in fruits and fruit products.
- **Products:** Wide range of products.
- **Acceptable Daily Intake:** No limit
- **Side effects:** Citric acid is a normal component of body cells and will be degraded and used by the body without side effects. Pseudo-allergic reactions (intolerance) have been reported, but these are very rare. People with such intolerance should also avoid all soft fruits and berries and products made thereof. It does not cause cancer as sometimes incorrectly reported.
- **Dietary restrictions:** all religious groups, vegans and vegetarians can normally consume Citric acid and citrates. Citric acid does not cause allergic reactions in people who are allergic to oranges and citrus fruits, as it is commercially made from sugar, not fruits.

Reference: <http://www.food-info.net/uk/index.htm>