



AvelaTM

Natural (R)-1,3 Butanediol

FORMULATION GUIDE

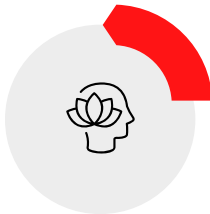
More Endurance • More Mental Clarity • More Energy

Avela™ natural (R)-1,3-butanediol is a functional ingredient that provides a new way for businesses to enable their customers to experience the benefits of ketosis, of increased endurance, mental clarity, and sustained energy on demand.

Benefits



Sugar-free, stimulant-free sustained energy



On-demand ketones for mental clarity and endurance



Plant-based and sustainable

Guidelines for Avela™ Use

Avela™ GRAS guidelines indicate a serving size of 11.5 grams up to three times daily, totaling 34.5 grams per day. However, for formulating, as little as 5-10 grams of Avela per serving can yield significant benefits. Avela is approved for the general population (people aged two and older) for use in beverages, caffeinated beverages, bars and gels at the above maximum daily amount.

How to use Avela™ Sample Kit

For first time Avela users to see how easy it is to formulate a beverage with Avela, an Avela serving (<11.5g) may be mixed with water and the water enhancer drops included in the sample kit. It's that easy.

	Water	Water Enhancer Drops	Avela™ (R)-1,3-Butanediol	Total:
Mio Lemonade plus Avela Drink (12 oz)*	323.50g	5.00g	11.50g	340g
Stur Strawberry Watermelon Naturally Flavored plus Avela Drink (12 oz)	315.50g	13.00g	11.50g	340g

*Typically included in Avela sample kits

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Compatible Ingredients with Avela™

Acids:

Citric acid, malic acid

Flavors:

Lemon, lime, berry blends, grapefruit, pineapple, coconut, ginger

Electrolytes:

Sodium, potassium, calcium, magnesium

Caffeine

* There are many more compatible ingredients with Avela. These are only the ingredients Geno has tested.

Suggested Flavor Maskers to use with Avela™ (R)-1,3 Butanediol

Avela can have a bitter taste when tasted neat or in formulations that do not account for its strong flavor. However, some common commercial flavor maskers will neutralize the characteristic, bitter Avela flavor, creating a foundation for formulating a variety of product types.

► **Sensient Smoothenol® Flavor Modulator** types modulate any bitter flavors in beverages and are conveniently used in beverages of 8 oz or more. The following two flavor modulators are suggested for use together and in equal parts.

Ingredient

Ingredient Code

Use Rate

**Sensient Smoothenol®
2G 3129 Natural**

■ SN2000038951

■ 0.10-0.20%

**Sensient Smoothenol®
Natural**

■ SN3000002956

■ 0.10-0.20%

→ [More Information](#)

Contact: Dennis Rollins
dennis.rollins@sensient.com

► **Clear IQ™ by Myco Technology** is a powerful bitter blocker and can be conveniently used in serving sizes of beverages, shots, bars, and gels of 8 oz or less.

Clear IQ™ natural flavor

■ C100 Absolute
Flavor

■ 10-50 ppm

→ [More Information](#)

Contact: Dennis Buckley
dbuckley@mycoiq.com

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Sample Avela™ Applications

Designed to be a starting point for your own innovations, Geno scientists have created highly functional and thoughtfully flavored applications using Avela.

Avela Pineapple Mango Selzer

<i>Ingredient</i>	<i>%</i>
Water	95.98
Avela™ (R)-1,3-Butanediol	3.28
Reb M	0.05
Sensient Smoothenol® Sweet Modifier	0.07
Sensient Smoothenol® 2G 3129 Modifier	0.07
Citric Acid	0.20
Malic Acid	0.10
Natural Pineapple Flavor	0.15
Natural Mango Flavor	0.10
Total	100.00

Avela Lemonade Electrolyte Sports Drink

<i>Ingredient</i>	<i>%</i>
Water	95.69
Avela™ (R)-1,3-Butanediol	3.23
Citric Acid	0.34
Malic Acid	0.09
Sucralose	0.02
Acesulfame-K	0.01
Natural Lemonade Flavor	0.30
Sensient Smoothenol® Modifier	0.10
Sensient Smoothenol® 3129 Modifier	0.10
Sea Salt	0.06
Potassium Sorbate	0.03
Sodium Benzoate	0.03
Total	100.00

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Avela Quick Facts:

Avela™ natural (R)-1,3-butanediol is a functional ingredient that provides a new way for consumers to experience the benefits of ketosis, of increased endurance, mental clarity, and sustained energy on demand.

- ▶ **Product Form:** Liquid
- ▶ **Trade name:** Avela (R)-1,3 butanediol
- ▶ **Chemical Name:** (R)-1,3 butanediol
- ▶ **CAS Number:** 6290-03-5
- ▶ **Max Daily Dose:** not more than 34.5g per day

Avela has been concluded to be generally recognized as safe ("self-GRAS") by a panel of independent, qualified scientists for use by the general population as a source of energy in beverages, bars and gels when used as directed.

To learn more about Avela, request a sample or sample kit, or hear how Avela can help differentiate products and support label claims, contact Geno at info@avelaup.com and visit <http://www.avelaup.com>.

About geno™

Geno (Genomatica, Inc.) is harnessing biology to remake everyday products to be more sustainable and natural. Geno's technology, built over the last 20 years, now commercializes and scales sustainable alternatives to commonly used ingredients and materials across several industries including functional foods and beverages, beauty, apparel, automotive, home and personal care, and packaging. Geno is partnering with world-leading brands including [Aquafil](#), [Asahi Kasei](#), [lululemon](#), [Unilever](#), [Kao](#) and [L'Oréal](#).

Nutrition Facts	
Serving Size	10g
Amount per serving	
Calories	69
%Daily Value *	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Total Sugars 0g	0%
Includes 0g Added Sugars	
Protein 0g	0%
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%
*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	
INGREDIENTS: (R)-1,3-BUTANEDIOL.	

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