



SusCarb
Fast & Sustained Energy

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SusCarb
HBCD
Highly Branched Cyclic Dextrin

Premium Carbohydrate

SusCarb™ is a superior highly branched cyclic dextrin (HBCD). Developed through ZymeBase's cutting-edge green biotechnology, SusCarb™ has exceptional abilities to enhance sports performance and modulate key physiological factors.

The Outstanding Characteristics of SusCarb™

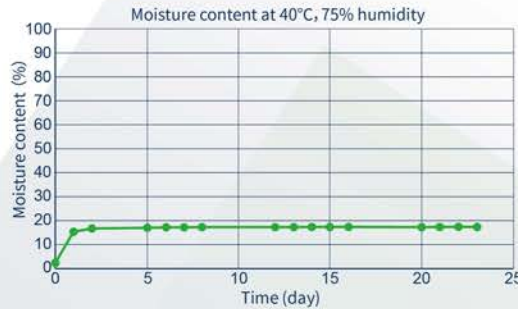
1 Apparent Characteristics

- ◆ Extremely water-soluble
- ◆ Colorless
- ◆ Transparent
- ◆ Odorless

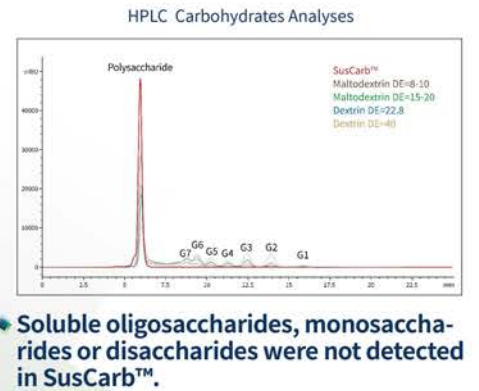


2 Low Hygroscopicity & High Stability

- ◆ Highly stable under UHT and pH 2.8 – 8
- ◆ Low moisture absorption (<18% at 40°C, 75% humidity)



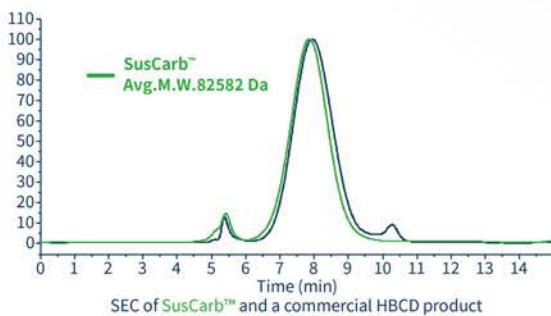
3 Sugar Free



- ◆ Soluble oligosaccharides, monosaccharides or disaccharides were not detected in SusCarb™.

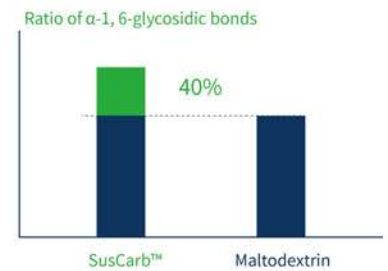
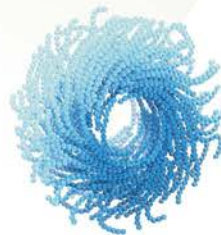
4 Molecular Weight Distribution and Purity

- ◆ Narrower and more uniform molecular weight distribution.
- ◆ No detectable mono-, di-, and oligo-saccharides.
- ◆ The average molecular weight is around 60,000–100,000 Da.



5 Molecular Structure

- ◆ More branching points: 40% higher α -1, 6-linkage ratio than maltodextrin.
- ◆ Shorter side chains: 40% shorter than maltodextrin.
- ◆ Each molecule has a cyclic moiety containing 16-29 glucose subunits: about 2-3 times bigger than cyclodextrins.
- ◆ More and shorter side chains, leading to a more sustainable release of glucose *in vivo*.



Application



Energy Powder



Energy Gel



Energy Bar



Functional Gummies



Jelly Drink



Energy Beverage

The Physiological Superiorities of SusCarb™

1 Enhancement in exercise performance*

- ◆ SusCarb™ VS Glucose Exercise Performance ↑ 137%;
- ◆ SusCarb™ VS Maltodextrin Exercise Performance ↑ 42%;

*The objective conclusion is based on experimental data and do not represent the product's efficacy.

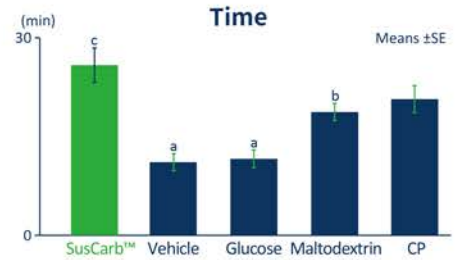


Fig.1 Swimming exhaustion time of different groups of tested subjects (CP: Commercialized HBCD Product)
Different letters indicate statistically significant differences at P<0.05.

Positive impacts on key factors for exercise performance

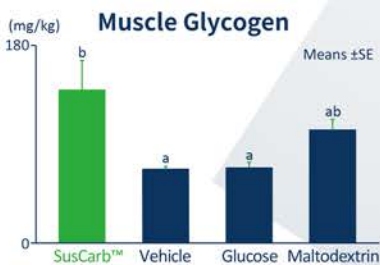


Fig.2.1 [Muscle glycogen] in specific groups of tested subjects when the vehicle group reached exhaustion

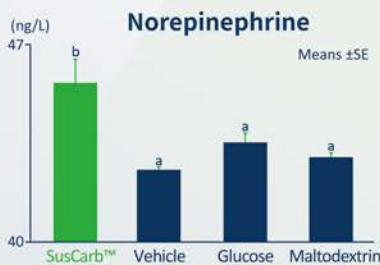


Fig.2.2 [Norepinephrine] in specific groups of tested subjects when the vehicle group reached exhaustion

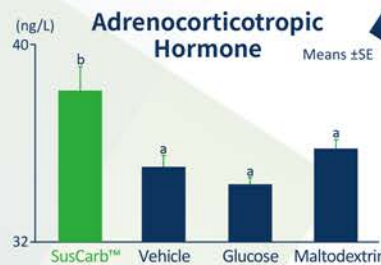


Fig.2.3 [Adrenocorticotrophic Hormone] in specific groups of tested subjects when the vehicle group reached exhaustion

Different letters indicate statistically significant differences at P<0.05.

3 Lower osmolarity, faster absorption

- ◆ With the same energy supplied by different carbohydrates, SusCarb™ has the lowest osmolarity, providing greater flexibility in the formulation.
- ◆ Isotonic beverages formulated with SusCarb™ are able to replenish water, energy and electrolytes quickly and simultaneously.

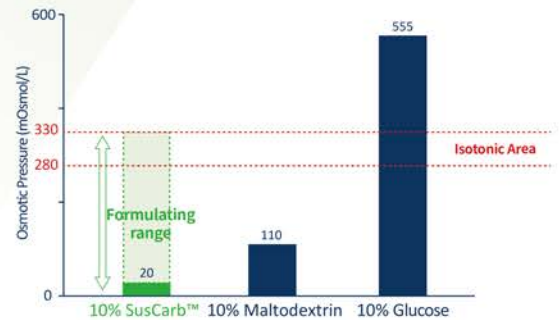
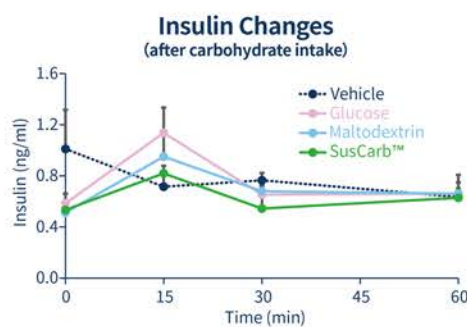
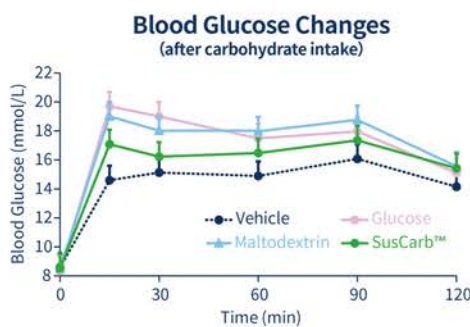


Fig.3 Comparison of osmotic pressures of different carbohydrates in aqueous solution

Reduced blood glucose and insulin spikes



4



Energy Gel				
Water 35%, Juice Concentrate 2.5%, Branched Chain Amino Acids 0.75%, Carbohydrates 35%				
Carbohydrates	Glucose	Dextrin (DE=15-20)	Commercialized HBCD	SusCarb™
Concentration	35%	35%	35%	35%
Osmolarity	2375	531	260	258

Recommended usage

Short Term **⌚ -1h**

Pre-Workout :
Provides Energy
SusCarb™ Energy Gel 30g

Post-Workout :
Fast Recovery
Muscle Growth
SusCarb™ 10g
Protein 10g
Amino Acid 10g

Body Build **⌚ 1-2h**

Pre-Workout :
Muscle Growth
SusCarb™ Energy Gel 30g
Protein 10g
Amino Acid 6g

Intra-Workout :
Improve Performance
SusCarb™ Energy Gel 90g

Post-Workout :
Fast Recovery
Muscle Growth
SusCarb™ 50g
Protein 17g
Amino Acid 17g

Endurance **⌚ 2-3h**

Pre-Workout :
Carb Loading
SusCarb™ Energy Gel 60-90g
1-3h before Workout

Intra-Workout :
Improve Performance
SusCarb™ Energy Gel 90g/h

Post-Workout :
Fast Recovery
SusCarb™ 60g

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