



Tagatose – The Good Sugar

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❖ **What is tagatose?** Tagatose is a naturally-occurring, rare sugar found in small quantities in apples, grains, dairy, and the cacao tree. Tagatose tastes nearly identical to sucrose (table sugar). *But tagatose is a healthy sugar.* Furthermore, tagatose blends well with high intensity sweeteners such as stevia, balancing the taste and mouthfeel. Tagatose also is fully functional in foods & beverages just like sucrose, for baking, caramelizing, dissolving, freezing, and more.

❖ **How is tagatose healthy?** Tagatose is clinically-proven as low glycemic (does not increase blood sugar levels), low calorie, and non-cariogenic (does not cause tooth decay). *Even better, tagatose not only is not harmful to health, but also contributes positively to good health.* Tagatose is a prebiotic (good for gut health), blocks metabolism of sucrose and starch, *reduces* blood sugar levels in diabetics, contributes to satiety, and helps break up dental biofilm.

❖ **Is tagatose commercially available today?** Yes, tagatose has been available commercially for ~15 years, and has regulatory approval in several countries. But tagatose is expensive. The standard manufacturing process starts with lactose, has several expensive processing steps, and has very low yields. Current retail is at least \$12/pound.

	Tagatose	Sucrose
Found in nature	yes	yes
Taste and sweetness	same as sucrose	
Functionality in food	same as sucrose	
Blood sugar effect	no increase; blocks sucrose/starch; lowers levels in diabetics	INCREASES
Calories per gram	1.5 (USA), 3.0 (EU)	3.9
Dental health	SAFE	TOOTH DECAY
Prebiotic	YES	NO

❖ **What is Bonumose’s innovation?** Bonumose has a breakthrough in rare sugars. We invented an enzymatic process for producing tagatose from commodity feedstock with ~90% yields. Our process reduces manufacturing cost by more than 80% compared to the lactose-based process. Our tagatose will be lower cost than erythritol and other sucrose alternatives. Bonumose’s process is proven at small-scale and we are preparing to build capacity for commercial production.

Process Comparison	Bonumose	Current
feedstock	starch/maltodextrin	lactose
feedstock cost	inexpensive/stable	expensive/volatile
reaction process steps	inexpensive	expensive
yield after purification	~90%	~20%
manufacturing cost/kg	< \$1	> \$5

❖ **Is tagatose better than other sucrose alternatives?** Yes. Tagatose is natural. Tagatose is better in: taste and food functionality; health benefits; blending with high intensity sweeteners; and (soon) cost.

Sweetener	Type	Relative Sweetness	Food Functionality	Glycemic Index	Calories per Gram	Dental Health Claim	Prebiotic
tagatose	monosaccharide	92%	same	3	1.5	yes	yes
allulose	monosaccharide	70%	close	1	0.39	no	no
erythritol	sugar alcohol	60%-70%	less	1	0.24	yes	no
isomaltulose	disaccharide	48%	less	32	3.9	yes	yes
xylitol	sugar alcohol	100%	less	12	2.4	yes	yes

❖ **Why does this matter?** Diabetes, obesity and tooth decay are global epidemics. Sucrose and other high glycemic sweeteners are major contributors to these critical health challenges. Traditional sugars contribute to poor gut health, too. Don’t you want a healthy, natural sweetener without paying exorbitant prices or having to sacrifice taste?

❖ **Does tagatose have to be labeled as an “added sugar?”** Under the FDA’s new nutrition label rules that go into effect in July 2018, tagatose is counted as “sugar” because it technically is a monosaccharide. However, because tagatose is so vastly better than regular “bad sugars,” the FDA will be asked to re-examine the labeling requirements for tagatose. It is important for consumers to be fully informed rather than have overly broad regulations create confusion between (a) good sugar that actually is healthy and (b) regular sugars that cause health problems.

❖ **When will Bonumose’s tagatose be available to buy?** We estimate our commercial-scale production will begin in the second half of 2018. For more information: Ed Rogers, CEO, Bonumose Biochem LLC, erogers@bonumose.com.