

## Supplemental Tables

Saccharide and sweet tastant properties			
Molecule	calories	relative sweetness	glycemic index
Glucose	3.8	0.75	100
Fructose	3.6	1.7	19
Galactose	4.1	0.3	n/d
Sucrose	3.9	1	68
Lactose	3.9	0.15	46
Maltose	4	0.3	105
Trehalose	4	0.45	72
Lactulose	n/d	n/d	n/d
Erythritol	0.2	0.7	0
Xylitol	2.4	1	12
Aspartame	4	160-220	0
Saccharin	0	300-600	0
References	[1-4]	[1, 2, 5, 6]	[2, 3]

**Table S1.** Sugar and sweet tastant properties as reported by mammalian studies.

<i>D. melanogaster</i> sugar transporter information			
Gene	Expression in adults of both genders	Expression level in gut tissue	Notes
<i>CG10960</i>	high	moderate	-
<i>CG1208</i>	very low-moderate	moderate	-
<i>CG1213</i>	moderate-very high	high	-
<i>CG14606</i>	very low-low	moderate	-
<i>CG15406</i>	moderate-very high	high-very high	-
<i>CG15408</i>	low-moderate	moderate-moderately high	-
<i>CG31272</i>	very low-low	moderately high	-
<i>CG3168</i>	high-very high	very high	-
<i>CG3285</i>	low-moderate	moderate-moderately high	-
<i>CG33281</i>	very low-low	moderate	-
<i>CG4607</i>	low-moderately high	high	-
<i>CG6484</i>	moderate-high	very high	-
<i>CG8249</i>	very low-low	very low-low	-
<i>CG8837</i>	very low-low	low-moderate	-
<i>Slc45-1</i>	low-moderately high	low-moderately high	-
<i>Treh</i>	high	high-very high	-
<i>tret1-1</i>	moderately high-very high	moderate	-
<i>CG31100</i>	very low-low	very low	mainly fat body
<i>CG31103</i>	very low-low	no	mainly head
<i>CG4797</i>	low	very low	mainly head
<i>GLUT1</i>	low	very low	mainly head
<i>Slc45-2</i>	very low	no	mainly head
<i>CG14605</i>	no	no	mainly testis
<i>CG14691</i>	no	no	mainly testis
<i>Glut3</i>	no	no	mainly testis
<i>sut4</i>	no	no	mainly testis
<i>tret1-2</i>	very low-moderate	no	mainly testis
<i>CG33282</i>	no	low-moderate	males only

**Table S2.** Expression patterns of predicted sugar transporters in *D. melanogaster*, as indicated by publicly available data posted by the ModEncode project [7], available through Flybase.net [8].

Content of nutrient-altered foods used in this study.			
Treatment classification	Treatment type	Ingredient 1	Ingredient 2
Saccharide and yeast treatments	Control food	3.5mL control food	1.5mL DI water
	Sucrose	3.5mL control food	1.5mL sucrose solution
	Yeast	3.5 mL control food	1.5mL yeast paste
	Galactose	3.5mL control food	1.5 mL galactose solution
	Lactose	3.5mL control food	1.5 mL lactose solution
	Maltose	3.5mL control food	1.5 mL maltose solution
	Trehalose	3.5mL control food	1.5 mL trehalose solution
Sweetener treatments	Control	5 mL control food	---
	Aspartame	5 mL control food	1.47 g dry aspartame
	Saccharine	5 mL control food	0.92 g dry saccharin
	Erythritol	5 mL control food	0.61 g dry erythritol
	Xylitol	5 mL control food	0.76 g dry xylitol
	Lactulose	5 mL control food	1.71 g dry lactulose
Dual yeast and sucrose treatment	Control food	3.5 mL control food	1.5 mL DI water
	Yeast food	3.5 mL yeast enriched	1.5 mL DI water
	Sucrose food	3.5 mL control food	1.5 mL sucrose solution
	Yeast + Sucrose	3.5 mL yeast enriched	1.5 mL sucrose solution
	Yeast + Maltose	3.5 mL yeast enriched	1.5 mL maltose solution
	Yeast + Trehalose	3.5 mL yeast enriched	1.5 mL trehalose solution
	Yeast + Lactose	3.5 mL yeast enriched	1.5 mL lactose solution
	Yeast + Galactose	3.5 mL yeast enriched	1.5 mL galactose solution
Dessication test	Control	5 mL control food	---
	Silica gel	5 mL control food	2.5 g silica gel

**Table S3.** Content of dietary treatments used in this study.

## Supplemental References

1. Nikoleli, G. and D.P. Nilkolelis, *Low Calorie Nonnutritive Sweeteners*, in *Sweeteners Nutritional Aspects, Applications, and Production Technology*, T. Varzakas, A. Labropoulos, and S. Anestis, Editors. 2012, CRC: Boca Raton. p. 79-118.
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6. Parrish, F.W., et al., *Sweetness of lactulose relative to sucrose*. *Food Science*, 1979. **44**(3): p. 813-815.
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