

Supplementary Material

Supplementary Table S1 Comparison of the sweet taste properties of point mutants of brazzein in experimental taste threshold (ETT).

Point mutant	Relative sweetness (ETT)†	Reference
Asp2Asn	0.10 / less sweet than WT	Assadi-Porter <i>et al.</i> (2000)
Lys6Arg	0.23 / less sweet than WT	Do <i>et al.</i> (2011)
Tyr8Ala	1.00 / equally sweet as WT	Assadi-Porter <i>et al.</i> (2000)
Lys15Ala	0.50 / less sweet than WT	Assadi-Porter <i>et al.</i> (2000)
Gln17Ala	1.00 / equally sweet as WT	Assadi-Porter <i>et al.</i> (2000)
Gln17Asn	0.21 / less sweet than WT	Yoon <i>et al.</i> (2011)
Asp29Lys	1.40 / sweeter than WT	Do <i>et al.</i> (2011)
Asp29Arg	1.26 / sweeter than WT	Do <i>et al.</i> (2011)
Lys30Ala	0.05 / less sweet than WT	Yoon <i>et al.</i> (2011)
Lys30Arg	0.31 / less sweet than WT	Yoon <i>et al.</i> (2011)
His31Ala	2.07 / sweeter than WT	Assadi-Porter <i>et al.</i> (2000)
His31Ala	0.33 / less sweet than WT	Yoon <i>et al.</i> (2011)
His31Arg	1.91 / sweeter than WT	Yoon <i>et al.</i> (2011)
Arg33Ala	0.10 / less sweet than WT	Assadi-Porter <i>et al.</i> (2000)
Arg33Lys	0.09 / less sweet than WT	Yoon <i>et al.</i> (2011)
Glu36Asp	1.86 / sweeter than WT	Do <i>et al.</i> (2011)
Glu41Ala	2.10 / sweeter than WT	Yoon <i>et al.</i> (2011)
Glu41Lys	1.54 / sweeter than WT	Yoon <i>et al.</i> (2011)
Glu41Arg	1.06 / equally sweet as WT	Yoon <i>et al.</i> (2011)
Arg43Ala	0.03 / tastes like water	Assadi-Porter <i>et al.</i> (2000)
Arg43Glu	0.20 / less sweet than WT	Yoon <i>et al.</i> (2011)
Arg43Lys	0.20 / less sweet than WT	Yoon <i>et al.</i> (2011)
Asp50Ala	0.21 / less sweet than WT	Assadi-Porter <i>et al.</i> (2000)

† Relative sweetness (ETT) means the ratio of the experimental taste thresholds (ETT) of des-pGlu1-brazzein to the ETT of the point mutant.

Supplementary Table S2 Comparison of the sweet taste properties of point mutants of brazzein in sweetness score (SS).

Point mutant	Relative sweetness (SS)†	Reference
Asp2Glu	1.33 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)
Asp2Asn	0.97 / equally sweet as WT	Jin <i>et al.</i> (2003)
Lys5Ala	0.48 / less sweet than WT	Jin <i>et al.</i> (2003)
Lys5Arg	1.08 / equally sweet as WT	Assadi-Porter <i>et al.</i> (2010)
Lys6Ala	0.40 / less sweet than WT	Jin <i>et al.</i> (2003)
Lys6Asp	0.24 / tastes like water	Jin <i>et al.</i> (2003)
Tyr8Ala	0.48 / less sweet than WT	Jin <i>et al.</i> (2003)
Lys15Ala	0.40 / less sweet than WT	Jin <i>et al.</i> (2003)
Gln17Ala	1.05 / equally sweet as WT	Jin <i>et al.</i> (2003)
Asp29Ala	1.25 / sweeter than WT	Jin <i>et al.</i> (2003)
Asp29Lys	1.44 / sweeter than WT	Jin <i>et al.</i> (2003)
Asp29Asn	1.23 / sweeter than WT	Jin <i>et al.</i> (2003)
Lys30Asp	0.32 / tastes like water	Jin <i>et al.</i> (2003)
His31Ala	0.53 / less sweet than WT	Jin <i>et al.</i> (2003)
Arg33Ala	0.18 / tastes like water	Jin <i>et al.</i> (2003)
Arg33Asp	0.26 / less sweet than WT	Jin <i>et al.</i> (2003)
Glu36Ala	0.23 / tastes like water	Jin <i>et al.</i> (2003)
Glu36Lys	0.24 / tastes like water	Jin <i>et al.</i> (2003)
Glu36Gln	0.30 / tastes like water	Jin <i>et al.</i> (2003)
Tyr39Ala	0.46 / less sweet than WT	Walters <i>et al.</i> (2009)
Tyr39Ala	0.16 / tastes like water	Assadi-Porter <i>et al.</i> (2010)
Asp40Ala	1.79 / sweeter than WT	Walters <i>et al.</i> (2009)
Asp40Lys	1.91 / sweeter than WT	Walters <i>et al.</i> (2009)
Asp40Lys	1.92 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)
Glu41Ala	1.57 / sweeter than WT	Walters <i>et al.</i> (2009)
Glu41Ala	1.41 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)
Glu41Lys	1.67 / sweeter than WT	Jin <i>et al.</i> (2003)
Glu41Gln	1.58 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)
Lys42Ala	0.92 / equally sweet as WT	Walters <i>et al.</i> (2009)
Lys42Ala	0.41 / less sweet than WT	Assadi-Porter <i>et al.</i> (2010)
Arg43Ala	0.10 / tastes like water	Jin <i>et al.</i> (2003)

Arg43Glu	0.08 / tastes like water	Assadi-Porter <i>et al.</i> (2010)
Arg43Lys	0.41 / less sweet than WT	Assadi-Porter <i>et al.</i> (2010)
Arg43Asn	0.47 / less sweet than WT	Walters <i>et al.</i> (2009)
Arg43Asn	0.08 / tastes like water	Assadi-Porter <i>et al.</i> (2010)
Asp50Ala	0.59 / less sweet than WT	Jin <i>et al.</i> (2003)
Asp50Lys	1.97 / sweeter than WT	Walters <i>et al.</i> (2009)
Asp50Asn	1.49 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)
Tyr54His	0.83 / equally sweet as WT	Assadi-Porter <i>et al.</i> (2010)
Tyr54Trp	1.51 / sweeter than WT	Walters <i>et al.</i> (2009)
Tyr54Trp	1.33 / sweeter than WT	Assadi-Porter <i>et al.</i> (2010)

† Relative sweetness (SS) means the ratio of the sweetness score (SS) of the point mutant to the SS of des-pGlu1-brazzein.