Table S1. Analysis of variance for 5AVA production

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	14	54.0326	3.8595	93.97	0.000
Linear	4	28.4225	7.1056	173.01	0.000
Ammonium sulphate	1	6.8267	6.8267	166.22	0.000
MOPS	1	0.8067	0.8067	19.64	0.000
Glucose	1	17.7504	17.7504	432.20	0.000
Xylose	1	3.0388	3.0388	73.99	0.000
Square	4	22.8025	5.7006	138.80	0.000
Ammonium sulphate*Ammonium sulphate	1	8.8054	8.8054	214.40	0.000
MOPS*MOPS	1	8.4131	8.4131	204.85	0.000
Glucose*Glucose	1	7.3624	7.3624	179.27	0.000
Xylose*Xylose	1	5.3778	5.3778	130.94	0.000
2-Way Interaction	6	2.8075	0.4679	11.39	0.000
Ammonium sulphate*MOPS	1	0.3600	0.3600	8.77	0.009
Ammonium sulphate*Glucose	1	0.1600	0.1600	3.90	0.066
Ammonium sulphate*Xylose	1	1.4400	1.4400	35.06	0.000
MOPS*Glucose	1	0.7225	0.7225	17.59	0.001
MOPS*Xylose	1	0.0025	0.0025	0.06	0.808
Glucose*Xylose	1	0.1225	0.1225	2.98	0.103
Error	16	0.6571	0.0411		
Lack-of-Fit	10	0.3200	0.0320	0.57	0.794

Pure Error	6	0.3371	0.0562
Total	30	54.6897	

DF: Degrees of Freedom), Adj SS: Adjusted Sum of Squares, Adj MS: Adjusted Mean Square, F-Value: F Statistic, P-Value: Probability Value

Table S2. Analysis of variance for putrescine production

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	20	38.57	1.9288	43.446	0.000
Linear	5	8.746	1.7492	39.41	0.010
Ammonium sulphate	1	0.1883	0.1882	4.24	0.001
MOPS	1	3.813	3.813	85.91	0.030
Urea	1	4.154	4.1548	93.61	0.002
Glucose	1	0.2367	0.2366	5.33	0.000
Xylose	1	0.3537	0.3536	7.97	0.000
Square	5	14.9658	2.99315	67.44	0.000
Ammonium sulphate*Ammonium sulphate	1	9.3486	9.34856	210.63	0.002
MOPS*MOPS	1	1.6817	1.6816	37.89	0.014
Urea*Urea	1	1.0737	1.0736	24.19	0.002
Glucose*Glucose	1	1.1146	1.11461	25.11	0.006
Xylose*Xylose	1	2.7434	2.7434	61.81	0.047
2-Way Interaction	10	14.8648	1.48648	33.49	0.000
Ammonium sulphate*MOPS	1	1.9238	1.9238	43.34	0.000
Ammonium sulphate*Urea	1	0.0069	0.0069	0.16	0.701
Ammonium sulphate*Glucose	1	0.6335	0.63348	14.27	0.003
Ammonium sulphate*Xylose	1	2.66803	2.66803	60.11	0.000
MOPS*Urea	1	5.7756	5.77555	130.13	0.000
MOPS*Glucose	1	2.4014	2.40139	54.1	0.000

MOPS*Xylose	1	0.4986	0.4986	11.23	0.006
Urea*Glucose	1	0.0173	0.01726	0.39	0.546
Urea*Xylose	1	0.0157	0.01566	0.35	0.565
Glucose*Xylose	1	0.9241	0.92413	20.82	0.001
Error	11	0.4882	0.04438		
Lack-of-Fit	6	0.2678	0.04464	1.01	0.505
Pure Error	5	0.2204	0.04408		
Total	31	39.0653			

DF: Degrees of Freedom), Adj SS: Adjusted Sum of Squares, Adj MS: Adjusted Mean Square, F-Value: F Statistic, P-Value: Probability Value

Table S3. Reported titers and yields of 5-aminovaleric acid (5-AVA) and putrescine obtained by different microbial hosts and feedstocks

Host Organism	C source	Process	Yield (g/g)	Titre (g/L)	Reference
5AVA					
E. coli	L-lysine	Enzymatic catalysis	0.62	63.20	[1]
E. coli	L-lysine	Whole-cell biotransformation	0.70	240.70	[2]
E. coli	L-lysine	Whole-cell biotransformation	0.44	29.12	[3]
E. coli	L-lysine	Whole-cell biotransformation	0.38	52.24	[4]
E. coli	L-lysine	Whole-cell biotransformation	0.26	10.24	[4]
C. glutamicum	Glucose and alternative carbon sources	Batch Fermentation	0.13	5.10	[5]
C. glutamicum	Glucose	Fed-batch fermentation	0.10	33.10	[6]
C. glutamicum	Miscanthus hydrolysate	Fed-batch fermentation	0.10	12.51	[7]
C. glutamicum	Rice straw hydrolysate	Batch Fermentation	0.007	0.26	[8]
C. glutamicum	wheat side stream concentrate hydrolysate	Batch Fermentation	0.15	5.9	[9]
Putrescine					

E. coli	Glucose	Batch	0.168	1.68	[10]
E. coli	Glucose	Fed-batch	-	24.2	[10]
E. coli	Glucose	fed-batch	0.256	43	[11]
E. coli	Glucose	Batch	-	4.7	[12]
C. glutamicum	Glucose	Batch	0.12	6	[13]
C. glutamicum	Glucose	Fed-batch	0.16	19	[14]
C. glutamicum	Sucrose	Batch	-	4.35	[15]
C. glutamicum	Thick juice	Batch	-	4.10	[16]
C. glutamicum	Glucose	Batch	0.26	5.1	[17]
C. glutamicum	Glucose	fed-batch	-	-	[18]
C. glutamicum	Glucose and Xylose	Batch	-	0.10	[8]
C. glutamicum	Rice straw hydrolysate	Batch	-	0.09	[8]

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