

Table S1 Temperature changes of four formulations (FCK, FT1, FT2 and FT3) at different fermentation stages (C0,C1,C2,C3 and C4)

Substrate	C0	C1	C2	C3	C4
FCK	33±0.00a	60±0.20d	55±0.10d	53±0.16d	52±0.00c
FT1	33±0.00a	73±0.16a	59±0.10b	57±0.00b	53±0.10b
FT2	33±0.00a	70±0.20b	56±0.16c	63±0.16a	60±0.10a
FT3	33±0.00a	66±0.10c	65±0.16a	56±0.00c	60±0.20a

#Different lowercase letters denote significant differences in each column ($P < 0.05$).

Table S2 pH changes of four formulations at different fermentation stages

Substrate	C0	C1	C2	C3	C4
FCK	5.99±0.00a	7.40±0.01c	8.01±0.01d	7.75±0.02d	5.89±0.01b
FT1	5.92±0.02b	7.29±0.01d	8.31±0.01c	8.22±0.02b	5.85±0.01c
FT2	5.85±0.01c	7.60±0.01b	8.37±0.01b	8.12±0.01c	5.93±0.01a
FT3	5.60±0.01d	7.87±0.01a	8.46±0.01a	8.52±0.01a	5.76±0.00d

#Different lowercase letters denote significant differences in each column ($P < 0.05$).

Table S3 Total carbon content changes at different fermentation stages

Substrate	C0	C1	C2	C3	C4
FCK	43.38±0.03 a	43.72±0.01 a	43.83±0.06 a	43.76±0.05 a	43.26±0.05 a
FT1	38.61±0.19 b	39.12±0.07 b	40.26±0.18 b	39.76±0.10 b	40.24±0.06 b
FT2	36.78±0.44 c	36.85±0.42 c	37.41±0.36 c	36.92±0.11 c	38.29±0.25 c
FT3	33.72±0.06 d	34.14±0.41 d	32.90±0.14 d	31.34±0.06 d	34.77±0.10 d

#Different lowercase letters denote significant differences in each column ($P < 0.05$).

Table S4 Total nitrogen content changes at different fermentation stages

Substrate	C0	C1	C2	C3	C4
FCK	2.37±0.02 b	2.28±0.02 b	2.31±0.01 b	2.25±0.01 b	2.47±0.03 c
FT1	2.66±0.03 a	2.51±0.04 a	2.54±0.04 a	2.49±0.02 a	2.60±0.00 a
FT2	2.39±0.04 b	2.25±0.05 bc	2.35±0.03 b	2.5±0.01 a	2.54±0.01 b
FT3	2.23±0.02 c	2.2±0.02 c	2.19±0.03 c	2.25±0.02 b	2.37±0.01 d

#Different lowercase letters denote significant differences in each column ($P < 0.05$).

Table S5 C:N ratio changes at different fermentation stages

Substrate	C0	C1	C2	C3	C4
FCK	18.31±0.14 a	19.21±0.11 a	19.01±0.1 a	19.47±0.06 a	17.5±0.22 a
FT1	14.53±0.09 d	15.61±0.24 c	15.84±0.33 b	15.99±0.13 b	15.49±0.05 b
FT2	15.36±0.02 b	16.41±0.15 b	15.9±0.03 b	14.79±0.03 c	15.11±0.06 c
FT3	15.11±0.06 c	15.51±0.06 c	15.03±0.14 c	13.95±0.09 d	14.66±0.08 d

#Different lowercase letters denote significant differences in each column ($P < 0.05$).

Table S6 Nutritional value of *A. aegerita* when cultivated on different substrates

Substrate	Proteing/100g	Fat g/100g	Ash content g/100g	Crude polysaccharide g/100g	Crude fibre g/100g
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ck	25.45±0.35f	3.55±0.05a	7.30±0.00d	3.97±0.02e	9.15±0.05a
T1	27.35±0.25d	3.15±0.05d	7.80±0.00a	4.31±0.08c	9.10±0.10a
T2	29.05±0.05b	3.34±0.01c	7.80±0.00a	3.90±0.02f	7.75±0.05f
T3	28.30±0.30c	3.00±0.00e	7.30±0.00d	4.39±0.03b	8.20±0.00e
FCK	25.40±0.20f	3.60±0.00a	7.70±0.00b	4.25±0.04c	8.95±0.05b
FT1	27.35±0.05d	3.20±0.00d	7.65±0.05c	4.10±0.03d	8.80±0.00c
FT2	26.60±0.10e	3.45±0.05b	7.20±0.00e	4.46±0.03a	8.45±0.05d
FT3	29.60±0.20a	3.30±0.00c	7.30±0.00d	3.96±0.02ef	8.45±0.05d

[#]Different lowercase letters denote significant differences in each column ($P < 0.05$).