

**Table S1.** The origins of the 53 isolates with its species name. The number on each coding represent the number of subculture in each universal bottles during the subculturing process of each isolates.

Num.	Isolates Code	Origins
1	FC3	Fish caudal (catfish suckermouth), <i>Hypostomus plecostomus</i>
2	CS7	Chia seeds, <i>Salvia hispanica</i> L
3	TA6	Tomatoes, <i>Solanum lycopersicum</i>
4	CL7	Chicken liver, <i>Gallus gallus domesticus</i>
5	AFL3	Asparagus, <i>Asparagus officinalis</i>
6	CI3	Chicken intestines, <i>Gallus gallus domesticus</i>
7	TAUCU23	Taucu (Fermented Yellow Soybean), <i>Glycine max</i>
8	PC2	Cabbage Pickle, <i>Brassica oleracea</i> var. <i>capitata</i>
9	TA5	Fermented Turnip, <i>Brassica rapa</i> subsp. <i>rapa</i>
10	TEMPEH5	Tempeh, <i>Glycine max</i>
11	CS4	Chicken Skin, <i>Gallus gallus domesticus</i>
12	PC1	Cucumber Pickle, <i>Cucumis sativus</i>
13	TA8	Tauhu (bean curd) , <i>Glycine max</i>
14	PC4	Carrot Pickle, <i>Daucus carota</i>
15	AFV5	Fermented Fenugreek, <i>Trigonella foenum-graecum</i>
16	AFSF2	Alfalfa Sprouts, <i>Medicago sativa</i>
17	PC6	Marinated Crab (Gejang), <i>Brachyura</i>
18	CL5	Chicken Liver, <i>Gallus gallus domesticus</i>
19	TAUCU7	Taucu, <i>Glycine max</i>
20	CS9	Fish skin (catfish suckermouth), <i>Hypostomus plecostomus</i>
21	CL4	Celery, <i>Apium graveolens</i>
22	AFV9	Fermented Fenugreek, <i>Trigonella foenum-graecum</i>
23	AFV1	Fermented Fenugreek, <i>Trigonella foenum-graecum</i>
24	YJ2	Jalapeno Yoghurt, <i>Capsicum annuum</i> Jalapeno
25	CI4	Fermented Lotus seeds, <i>Nelumbo nucifera</i>
26	CL6	Canned Lychee fruits, <i>Litchi chinesis</i>
27	KS1	Kidney Beans, <i>Phaseolus vulgaris</i>
28	<i>Lactobacillus fermentum</i>	<i>Lactobacillus fermentum</i> ATCC : 14931
29	CL1	Chicken Liver, <i>Gallus gallus domesticus</i>
30	TK3	Tempoyak, <i>Durio zibethinus</i> L.
31	TA18	Tauhu, <i>Glycine max</i>
32	FS1	Fish Skin(catfish suckermouth), <i>Hypostomus plecostomus</i>
33	HML1	Fermented Mayonnaise
34	<i>Lactobacillus plantarum</i>	<i>Lactobacillus plantarum</i> ATC : 8014
35	TA9	Fermented sugarcane, <i>Saccharum officinarum</i>
36	AFV4	Fermented Fenugreek, <i>Trigonella foenum-graecum</i>
37	YJ5	Jalapeno Yoghurt, <i>Capsicum annuum</i> Jalapeno
38	AFRZ	Fermented Ladies finger, <i>Abelmoschus esculentus</i>
39	FC2	Fish caudal (catfish suckermouth), <i>Hypostomus plecostomus</i>
40	HML2	Fermented Mayonnaise
41	FS3	Fish Skin (catfish suckermouth), <i>Hypostomus plecostomus</i>
42	CS5	Coriander, <i>Coriandrum sativum</i>
43	AFV2	Fermented Fenugreek, <i>Trigonella foenum-graecum</i>
44	CL3	Chicken Leg , <i>Gallus gallus domesticus</i>
45	HML3	Cow Milk's Yoghurt, <i>Bos taurus</i>
46	TEMPEH48	Tempeh, <i>Glycine max</i>
47	TEMPEH37	Tempeh, <i>Glycine max</i>
48	CL13	Chicken Leg, <i>Gallus gallus domesticus</i>

49	RB5	Red Beans, <i>Vigna angularis</i>
50	<i>Lactobacillus casei</i>	<i>Lactobacillus casei</i> ATCC: 393
51	CL8	Chicken Limb , <i>Gallus gallus domesticus</i>
52	CI2	Chicken Intestines (Small), <i>Gallus gallus domesticus</i>
53	FC1	Fish Caudal (catfish suckermouth), <i>Hypostomus plecostomus</i>

**Table S2.** The survivability rate of 53 strains after 6 h of exposure at different parameters .

Strains	Control	Acid (pH 4.0)	Temperature (40°C)	Bile Salts (3%)	Enzyme (pepsin)	Overall SR (%) <sup>1</sup>
CL3	9.35 ± 0.01	8.35 ± 0.01	6.57 ± 0.02	7.12 ± 0.01	6.24 ± 0.05	67.64 <sup>a</sup>
PC2	8.34 ± 0.10	7.34 ± 0.10	6.38 ± 0.10	7.78 ± 0.03	6.03 ± 0.02	77.21 <sup>a</sup>
TA8	8.44 ± 0.01	7.44 ± 0.01	6.52 ± 0.05	7.00 ± 0.01	6.03 ± 0.01	66.14 <sup>ab</sup>
PC4	7.97 ± 0.10	7.07 ± 0.10	6.38 ± 0.01	7.13 ± 0.02	6.39 ± 0.04	89.62 <sup>b</sup>
AFSF2	8.78 ± 0.01	7.48 ± 0.01	6.59 ± 0.06	8.13 ± 0.10	6.13 ± 0.01	77.21 <sup>c</sup>
<i>L.fermentum</i> ATCC :14931	8.99 ± 0.03	7.39 ± 0.03	6.37 ± 0.05	7.13 ± 0.03	6.06 ± 0.01	84.99 <sup>ab</sup>
FS3	9.20 ± 0.02	7.20 ± 0.02	6.26 ± 0.01	8.13 ± 0.07	6.21 ± 0.02	76.38 <sup>a</sup>
RB5	8.35± 0.15	8.35± 0.15	6.78± 0.00	7.04± 0.07	6.91±0.01	98.94 <sup>a</sup>
CL8	8.39± 0.02	8.49± 0.02	6.52±0.02	7.00 ± 0.02	6.23±0.06	88.74 <sup>b</sup>
HML3	7.07±0.08	8.07±0.08	6.24±0.04	7.41± 0.09	6.37±0.06	65.96 <sup>abc</sup>
FC3	2.33 ± 0.01	1.15 ± 0.01	4.54 ± 0.02	5.62 ± 0.01	3.23 ± 0.05	37.64 <sup>a</sup>
CS7	1.38 ± 0.10	1.14 ± 0.10	2.35 ± 0.10	0.48 ± 0.03	2.03 ± 0.02	13.21 <sup>a</sup>
TA6	1.33 ± 0.01	3.55 ± 0.01	2.53 ± 0.03	2.01 ± 0.01	1.02 ± 0.01	16.14 <sup>ab</sup>
CL7	2.37 ± 0.10	3.07 ± 0.10	2.34 ± 0.01	4.15 ± 0.02	5.28 ± 0.04	19.26 <sup>b</sup>
AFL3	0.78 ± 0.01	3.15 ± 0.01	1.31 ± 0.05	2.37 ± 0.10	4.23 ± 0.01	17.21 <sup>c</sup>
CI3	2.45 ± 0.05	2.37 ± 0.03	1.56 ± 0.03	0.23 ± 0.03	2.06 ± 0.01	14.99 <sup>ab</sup>
TAUCU23	1.12 ± 0.02	1.36 ± 0.02	2.15 ± 0.03	3.09 ± 0.07	1.21 ± 0.02	21.33 <sup>a</sup>
TA5	0.35± 0.15	1.72± 0.15	1.58± 0.01	1.29± 0.03	1.91±0.01	13.94 <sup>a</sup>
TEMPEH5	1.45± 0.02	1.27± 0.02	1.12±0.02	2.18 ± 0.02	1.23±0.07	13.84 <sup>b</sup>
CS4	1.04±0.03	2.19±0.03	1.13±0.04	1.11± 0.09	1.13±0.06	15.69 <sup>abc</sup>
PC1	1.37 ± 0.01	1.25 ± 0.01	1.33 ± 0.02	1.16 ± 0.01	1.45 ± 0.04	17.46 <sup>a</sup>
AFV5	0.97 ± 0.13	0.34 ± 0.03	1.15 ± 0.13	1.48 ± 0.03	1.33 ± 0.02	14.21 <sup>a</sup>
PC6	2.13 ± 0.01	1.35 ± 0.01	1.14 ± 0.03	1.21 ± 0.01	1.28 ± 0.01	15.14 <sup>ab</sup>
CL5	1.18 ± 0.10	3.57 ± 0.10	2.13 ± 0.01	2.05 ± 0.02	1.15 ± 0.03	13.26 <sup>b</sup>
TAUCU7	0.78 ± 0.01	3.15 ± 0.01	1.31 ± 0.05	2.37 ± 0.10	4.23 ± 0.01	17.21 <sup>c</sup>
CS9	2.15 ± 0.05	1.37 ± 0.03	1.36 ± 0.03	0.13 ± 0.03	1.46 ± 0.01	14.99 <sup>ab</sup>
CL4	1.12 ± 0.02	1.36 ± 0.02	2.15 ± 0.03	3.09 ± 0.07	1.21 ± 0.02	21.33 <sup>a</sup>
AFV9	0.35± 0.15	1.72± 0.15	1.58± 0.01	1.29± 0.03	1.91±0.01	13.94 <sup>a</sup>
AFV1	1.45± 0.02	1.27± 0.02	1.12±0.02	2.18 ± 0.02	1.23±0.07	13.51 <sup>b</sup>
YJ2	1.36±0.03	1.38±0.03	1.15±0.04	3.18± 0.09	2.15±0.06	18.69 <sup>abc</sup>
CI4	1.29 ± 0.01	2.37 ± 0.01	1.43 ± 0.02	0.93 ± 0.01	0.87 ± 0.04	17.46 <sup>a</sup>
CL6	0.87 ± 0.13	0.51 ± 0.01	0.51 ± 0.13	0.57 ± 0.03	0.29 ± 0.02	15.21 <sup>a</sup>
KS1	2.85 ± 0.01	5.65 ± 0.02	7.68 ± 0.03	4.03 ± 0.01	2.03 ± 0.01	36.41 <sup>ab</sup>

CL1	5.29 ± 0.10	3.29 ± 0.10	1.21 ± 0.01	3.09 ± 0.03	2.02 ± 0.03	29.26 <sup>b</sup>
TK3	0.31 ± 0.01	0.15 ± 0.01	0.24 ± 0.03	1.87 ± 0.10	1.83 ± 0.01	5.21 <sup>c</sup>
TA18	2.15 ± 0.05	3.73 ± 0.03	3.67 ± 0.03	6.45 ± 0.03	5.48 ± 0.01	38.99 <sup>ab</sup>
FS1	1.12 ± 0.02	5.36 ± 0.03	1.15 ± 0.01	5.09 ± 0.07	6.21 ± 0.02	37.33 <sup>a</sup>
HML1	7.35± 0.15	5.72± 0.15	4.78± 0.01	6.29± 0.03	2.91±0.01	61.94 <sup>a</sup>
<i>Lactobacillus plantarum</i>	4.45± 0.02	1.47± 0.02	7.12±0.02	5.18 ± 0.02	5.23±0.07	53.51 <sup>b</sup>
TA9	4.36±0.03	1.38±0.03	1.15±0.04	4.18± 0.09	5.15±0.06	48.69 <sup>abc</sup>
AFV4	2.37 ± 0.10	3.07 ± 0.10	2.34 ± 0.01	4.15 ± 0.02	5.28 ± 0.04	19.26 <sup>b</sup>
YJ5	0.78 ± 0.01	3.15 ± 0.01	1.31 ± 0.05	2.37 ± 0.10	4.23 ± 0.01	17.21 <sup>c</sup>
AFRZ	2.45 ± 0.05	2.37 ± 0.03	1.56 ± 0.03	0.23 ± 0.03	2.06 ± 0.01	14.99 <sup>ab</sup>
FC2	1.12 ± 0.02	1.36 ± 0.02	2.15 ± 0.03	3.09 ± 0.07	1.21 ± 0.02	21.33 <sup>a</sup>
HML2	0.35± 0.15	1.72± 0.15	1.58± 0.01	1.29± 0.03	1.91±0.01	13.94 <sup>a</sup>
CS5	1.45± 0.02	1.27± 0.02	1.12±0.02	2.18 ± 0.02	1.23±0.07	13.84 <sup>b</sup>
AFV2	1.04±0.03	2.19±0.03	1.13±0.04	1.11± 0.09	1.13±0.06	15.69 <sup>abc</sup>
TEMPEH48	1.37 ± 0.01	1.25 ± 0.01	1.33 ± 0.02	1.16 ± 0.01	1.45 ± 0.04	17.46 <sup>a</sup>
TEMPEH37	0.97 ± 0.13	0.34 ± 0.03	1.15 ± 0.13	1.48 ± 0.03	1.33 ± 0.02	14.21 <sup>a</sup>
CL13	2.13 ± 0.01	1.35 ± 0.01	1.14 ± 0.03	1.21 ± 0.01	1.28 ± 0.01	15.14 <sup>ab</sup>
<i>Lactobacillus casei</i>	1.18 ± 0.10	3.17 ± 0.10	2.13 ± 0.01	2.05 ± 0.02	3.15 ± 0.03	13.26 <sup>b</sup>
CI2	4.37 ± 0.13	0.14 ± 0.03	1.45 ± 0.13	7.38 ± 0.03	6.33 ± 0.02	44.21 <sup>a</sup>
FC1	2.13 ± 0.01	1.35 ± 0.01	1.14 ± 0.03	2.21 ± 0.01	2.27 ± 0.01	15.14 <sup>ab</sup>

<sup>abc</sup> represent significant differences within the column ( $p < 0.05$ ).