Supplementary Table S1. Morphological and biochemical characteristics of LABs from various fish intestines.

Strains No.	source	Gram stain	Acid production	Catalase test	Oxidase test	GABA (mg/L)
RK01	1[a]	+	+	-	-	223
RK02	1	+	+	-	-	785
RK03	1	+	+	-	-	1,024
RK05	2	+	+	-	-	106
RK08	2	+	+	-	-	154
RK12	2	+	+	-	-	123
RK13	2[b]	+	+	-	-	138
RK14	2	+	+	-	-	237
RK15	3	+	+	-	-	141
RK17	3	+	+	-	-	469
RK18	3	+	+	-	-	543
RK19	4[a]	+	+	-	-	639
RK20	4	+	+	-	-	99
RK22	4	+	+	-	-	309
RK24	4	+	+	-	-	473
RK26	5	+	+	-	-	76
RK27	5	+	+	-	-	152
RK29	5	+	+	-	-	629
RK30	5	+	+	-	-	529
RK35	6	+	+	-	-	218
RK36	6	+	+	-	-	282
RK37	7[b]	+	+	-	-	289
RK38	7	+	+	-	-	237
RK41	8[a]	+	+	-	-	730
RK42	8	+	+	-	-	578
RK43	8	+	+	-	-	416
RK45	8	+	+	-	-	813
RK46	9	+	+	-	-	252
RK47	9	+	+	-	-	239
RK48	9	+	+	-	-	223
RK49	9	+	+	-	-	165
RK50	9	+	+	-	-	216

1 : *Priacanthus macracanthus*; 2 : *Chanos chanos* ; 3: *Perca fluviatilis* ; 4: *Thunnus thynnus* ; 5: *Psenopsis anomala* ; 6: *Ostreoida Rafinesque* ; 7: *Ephippus orbis* ; 8: *Ctenopharynodon idellus* ; 9: *Penaeus monodon* ;. [a]: Kaohsiung Nanzih ; [b]: Kaohsiung Zuoying.

Supplementary Table S2. The comparison of cost of the fermentation media, MRS medium and GM broth.

	g/Bottle	Unit price $USD	$USD/g	Requirements g/L	$USD/L	GABA g/L	GABA $USD/kg
MRS-MSG							
MRS	500	120	0.240	55.00	13.20		
MSG	500	2.65	0.005	102.92	0.55		
Total					13.75	25.36	542.2
GM broth							
Glucose	500	1.43	0.003	10.00	0.030		
Yeast extract	4,000	50.43	0.013	25.00	0.325		
MSG	500	2.65	0.005	121.63	0.608		
$CaCO_3$	500	33.18	0.066	0.002	0.0001		
$MnSO_4$	500	43.13	0.086	0.002	0.0002		
Tween 80	1,000	47.78	0.048	0.002	0.0001		
PLP	1	23.56	23.56	0.003	0.0001		
Total					0.96	62.52	15.4
***Lactobacillus brevis* NCL912 (Li *et al.*, 2010b)**							
Glucose	500	1.43	0.003	50.00	0.150		
Soya peptone	100	49.00	0.490	25.00	12.250		
MSG	500	2.65	0.005	243.26	1.216		
$MnSO_4$	500	43.13	0.086	0.01	0.001		
Tween 80	1,000	47.78	0.048	0.01	0.001		
Total					13.62	103.72	131.3