Table S1. Treatment compositions for screening of feed additives.

Ingredients	Treatments (%)					
	Control	1	2	3	4	5
Saccharina japonica (Dashima)	0	10	10	10	20	30
Dentropanax morbifera(Hwangchil)	0	10	20	30	10	10
Rice bran	100	80	70	60	70	60

Table S2. Proximate composition of milled plant powder mixed with rice bran before fermentation.

Items (%)	Control	T1	T2	T3	T4	T5	SEM	*p*-Value
Moisture	9.75^{a}	9.07^{b}	9.06^{b}	8.64^{c}	8.28^{d}	8.26^{d}	0.0003	<.0001
Crude protein	14.27^{a}	13.04^{b}	12.84^{c}	12.58^{d}	12.32^{e}	11.91^{f}	0.003	<.0001
Ether extract	12.04^{a}	9.74^{b}	8.79^{c}	8.04^{d}	7.96^{d}	8.18^{d}	0.08	<.0001
Crude fiber	11.68^{d}	12.84^{bc}	11.84^{d}	12.00^{cd}	13.55^{b}	14.56^{a}	0.24	<.0001
Crude ash	9.74^{d}	10.75^{c}	11.28^{ab}	11.48^{a}	10.89^{bc}	9.68^{d}	0.07	<.0001
NFE	42.53^{c}	44.56^{b}	46.19^{a}	47.26^{a}	47.00^{a}	47.41^{a}	0.76	<.0001

^{a,b,c,d,e,f} Values with different superscripts in the same row differ significantly ($p < 0.05$).

Table S3. Proximate composition of milled plant powder mixed with rice bran after fermentation.

Items (%)	control	T1	T2	T3	T4	T5	SEM	*p*-Value
Moisture	15.76^{d}	16.91^{b}	17.52^{a}	16.79^{b}	15.31^{e}	16.48^{c}	0.01	<.0001
Crude protein	14.44^{a}	12.96^{b}	12.20^{d}	11.56^{e}	12.48^{c}	11.56^{e}	0.004	<.0001
Ether extract	10.28^{a}	7.52^{b}	6.60^{c}	6.07^{c}	7.22^{b}	6.43^{c}	0.11	<.0001
Crude fiber	10.28^{b}	10.45^{b}	11.09^{b}	10.62^{b}	12.59^{a}	13.30^{a}	0.22	<.0001
Crude ash	9.96^{c}	9.69^{c}	10.78^{b}	12.24^{a}	9.90^{c}	8.98^{d}	0.05	<.0001
NFE	39.27^{c}	42.47^{ab}	41.82^{b}	42.72^{ab}	42.50^{ab}	43.25^{a}	0.48	0.0002

^{a,b,c,d,e,f,} Values with different superscripts in the same row differ significantly ($p < 0.05$).

Table S4. Microbiological count of the fermented feed additive treatments.

Treatments	Probiotic Bacteria (cfu/g)	
	Lactobacillus plantarum	*Saccharomyces cerevisiae*
Control	$2.26 \times 10^{8\,a}$	$3.24 \times 10^{7\,a}$
T1	$3.50 \times 10^{7\,b}$	$1.22 \times 10^{6\,b}$
T2	$7.87 \times 10^{7\,b}$	$7.37 \times 10^{6\,b}$
T3	$3.60 \times 10^{7\,b}$	$2.51 \times 10^{6\,b}$
T4	$2.03 \times 10^{8\,a}$	$5.93 \times 10^{6\,b}$
T5	$2.13 \times 10^{8\,a}$	$8.40 \times 10^{5\,b}$
p-Value	0.001	<.0001

Table S5. Cost of plant-derived feed ingredient per treatment.

Treatments	Price (KRW)			
	Rice Bran	*S. japonica*	*D. morbifera*	Total Cost for 1 kg
Control	250	0	0	250
T1	200	700	3000	3900
T2	175	700	6000	6875
T3	150	700	9000	9850
T4	175	1400	3000	4575
T5	150	2100	3000	5250

1 KRW = 0.00082 USD; 1 USD = 1235 KRW.