Supplementary Table S1 Bacterial relative abundances of the top 10 phylum level in goats when used as Macadamia integrifolia husk as substrate in vitro with different level of exogenous enzymes.

OTU ID	CON	TRE1	TRE2	TRE3
Bacteroidota	0.5230	0.5424	0.5532	0.5463
Bacillota	0.3441	0.3453	0.2977	0.3134
Kiritimatiellota	0.0291	0.0210	0.0328	0.0268
Planctomycetota	0.0227	0.0263	0.0231	0.0252
Synergistota	0.0189	0.0169	0.0277	0.0226
Lentisphaerota	0.0120	0.0092	0.0147	0.0160
Pseudomonadota	0.0116	0.0103	0.0085	0.0100
unclassified	0.0098	0.0048	0.0095	0.0082
Actinomycetota	0.0054	0.0042	0.0071	0.0066
Thermodesulfobacteriota	0.0044	0.0043	0.0047	0.0052
others	0.0192	0.0152	0.0211	0.0199

CON, control group, Macadamia integrifolia husk with no cellulases and pectinase; TRE1, treat-ment 1, Macadamia integrifolia husk with 0.5 g/kg cellulases and 0.5 g/kg pectinase; TRE2, treat-ment 2, Macadamia integrifolia husk with 1.0 g/kg cellulases and 0.5 g/kg pectinase; TRE3, treat-ment 3, Macadamia integrifolia husk with 1.5 g/kg cellulases and 0.5 g/kg pectinase.

Supplementary Table S2 Bacterial relative abundances of the top 30 genus in goats when used as Macadamia integrifolia husk as substrate in vitro with different level of exogenous enzymes.

OTU ID	CON	TRE1	TRE2	TRE3
norank_p__Bacteroidota	0.2930	0.3061	0.3041	0.3174
Succiniclasticum	0.0631	0.0582	0.0613	0.0697
unclassified_o__Bacteroidales	0.0504	0.0557	0.0446	0.0446
unclassified_f__Muribaculaceae	0.0424	0.0395	0.0517	0.0443
Aristaeella	0.0352	0.0399	0.0286	0.0308
Alistipes	0.0242	0.0269	0.0239	0.0225
Kiritimatiella	0.0244	0.0176	0.0268	0.0222
Fretibacterium	0.0172	0.0150	0.0251	0.0205
Ruminococcus	0.0171	0.0171	0.0166	0.0161
Prevotella	0.0126	0.0142	0.0175	0.0161
norank_o__Bacteroidales	0.0146	0.0132	0.0129	0.0126
norank_f__Oscillospiraceae	0.0152	0.0177	0.0101	0.0094
Gimesia	0.0117	0.0125	0.0117	0.0137
Selenomonas	0.0104	0.0107	0.0098	0.0128
Pontibacter	0.0082	0.0102	0.0142	0.0109
Anaerovorax	0.0118	0.0119	0.0083	0.0088
Victivallis	0.0076	0.0057	0.0088	0.0103
unclassified	0.0098	0.0048	0.0095	0.0082
Zeaxanthinibacter	0.0088	0.0093	0.0071	0.0068
Eubacterium	0.0078	0.0072	0.0068	0.0068
Balneicella	0.0083	0.0059	0.0074	0.0063
Porphyromonas	0.0076	0.0066	0.0054	0.0070
norank_o__Eubacteriales	0.0063	0.0058	0.0063	0.0064
unclassified_f__Lachnospiraceae	0.0062	0.0066	0.0057	0.0057
Schwartzia	0.0061	0.0057	0.0051	0.0064
Lachnoclostridium	0.0063	0.0072	0.0051	0.0045
Vescimonas	0.0064	0.0042	0.0057	0.0051
Succinivibrio	0.0054	0.0059	0.0040	0.0058
Angelakisella	0.0065	0.0054	0.0043	0.0039
Kineothrix	0.0043	0.0072	0.0040	0.0042
others	0.2512	0.2458	0.2475	0.2399

CON, control group, Macadamia integrifolia husk with no cellulases and pectinase; TRE1, treat-ment 1, Macadamia integrifolia husk with 0.5 g/kg cellulases and 0.5 g/kg pectinase; TRE2, treat-ment 2, Macadamia integrifolia husk with 1.0 g/kg cellulases and 0.5 g/kg pectinase; TRE3, treat-ment 3, Macadamia integrifolia husk with 1.5 g/kg cellulases and 0.5 g/kg pectinase.