Table S4. Effects of Virginiamycin and organic acids supplementation on the relative abundance (%) of the predominant microbiota (top 15) at the family level in the cecal digesta of broilers at the age of 21 days in this experiment.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Taxonomy | |  | Groups 1 | | | | | SEM | *P* value |
| Phyla classification | Family classification |  | NC | PC | DOA | WOA | MOA |
| Firmicutes | Ruminococcaceae | | 35.75 b | 33.42 b | 40.46 b | 57.52 a | 42.64 ab | 2.87 | 0.056 | |
| Lactobacillaceae | | 22.47 a | 20.62 ab | 15.45 ab | 3.86 b | 21.55 ab | 2.90 | 0.226 | |
| Lachnospiraceae | | 18.25 a | 16.57 a | 19.21 a | 23.89 a | 16.71 a | 1.49 | 0.550 | |
| Clostridiales\_vadinBB60\_group | | 6.96 a | 4.03 a | 2.68 a | 2.36 a | 4.82 a | 0.82 | 0.416 | |
| Streptococcaceae | | 2.67 a | 0.03 b | 1.79 ab | 0.06 b | 0.03 b | 0.41 | 0.112 | |
| Erysipelotrichaceae | | 2.15 a | 3.76 a | 2.12 a | 3.18 a | 2.91 a | 0.33 | 0.471 | |
| Peptostreptococcaceae | | 0.51 a | 1.17 a | 0.68 a | 1.13 a | 1.05 a | 0.23 | 0.871 | |
| Enterococcaceae | | 0.140 a | 0.419 a | 0.191 a | 0.134 a | 0.472 a | 0.059 | 0.206 | |
| Christensenellaceae | | 0.319 a | 0.633 a | 0.679 a | 0.916 a | 0.754 a | 0.096 | 0.408 | |
| Eubacteriaceae | | 0.045 b | 0.198 a | 0.067 b | 0.070 b | 0.043 b | 0.021 | 0.096 | |
| Proteobacteria | Enterobacteriaceae | | 4.71 bc | 11.21 a | 8.77 ab | 1.86 c | 1.17 c | 1.06 | 0.003 | |
| Bacteroidetes | Porphyromonadaceae | | 0.279 b | 0.374 ab | 0.756 a | 0.255 b | 0.385 ab | 0.071 | 0.169 | |
| Tenericutes | Anaeroplasmataceae | | 0.769 a | 0.155 b | 0.263 b | 0.481 ab | 0.495 ab | 0.080 | 0.123 | |
| Actinobacteria | Coriobacteriaceae | | 0.097 b | 0.250 ab | 0.091 b | 0.303 a | 0.419 a | 0.034 | 0.003 | |
| Bifidobacteriaceae | | 0.0014 a | 0.0016 a | 0.0005 a | 0.0243 a | 0.0003 a | 0.0041 | 0.268 | |
| Others | | | 4.88 a | 7.16 a | 6.80 a | 3.96 a | 6.56 a | 0.63 | 0.322 | |

Notes: Superscript 1: NC = negative control, basal diet and basal drinking water with no antibiotic supplementation; PC = positive control, antibiotics supplementation; DOA = NC plus diet-administered OA supplementation; WOA = NC plus water-administered OA supplementation; MOA = NC plus diet-administered and water-administered OA supplementation. Values are expressed as means with pooled SEM values. *P* value is expressed combined significance. In the same line, values with different letters are significantly different for all possible combinations of these different groups (*P* < 0.05 or *P* < 0.01), n = 8.