Table S1. Characteristics of the 42 included studies

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
1	Abudabos et al., 2015	Ross 308	M & F	Yes	GalliPro	S	*Bacillus*	*B. subtilis*	1	42	42	Ile, Cae	feed	daily	42	0.2 g GalliPro/kg, GalliPro (8×10^5 CFU *B. subtilis*/g feed)
2	Ahmed et al., 2014	Ross 308	M	No		S	*Bacillus (BAP)*	*Bacillus amyloliquefaciens KB3*	1	35	35	Cae	feed	daily	35	1 g/kg of BAP, 5 g/kg of BAP, 10 g/kg of BAP, 20 g/kg of BAP
3	Altaher et al., 2015	Cobb 500	M	No		M	*Lactobacillus*	*L. Pentosus Ita23 and L. Acidipiscis Ita44*	1	35	35	Cae	feed	daily	35	0.1% of a mixture of *L. pentosus ITA23* and *L. acidophilus ITA44*; 10^9 cells/kg feed.
4	Boostani et al., 2013-1	Ross 308	M	No		M	*Lactobacillus*	*L. delbrueckii and L. thermophilus*	1	42	21	Cae	water	daily	42	10%, 5% and 2.5 % of water at starter, grower and finisher (yogurt, 1×10^8 cfu of *L. delbrueckii* and *L. thermophilus*)
	Boostani et al., 2013-2						*Sacchromyces and Lactobacillus*	*S. cervisiae and L. acidophilus*								1000, 500 and 250 g/ton feed at starter, grower and finisher (the pax probiotic, 1×10^{10} cells/mg of *S. cervisiae* and *L. acidophilus*)
5	Dabiri et al., 2009	Ross 308	"?"	Yes	Primalac	"?"	*"?"*	*"?"*	1	21	21	Cro, Ile	feed	daily	21	900g/ton
6	Daşkiran et al., 2012	Ross 308	M	Yes	Protexin	M	*Lactobacillus, Bifidobacterium, Streptococcus, Enterococcus, Aspergillus and Candida*	*L. plantarum , L. delbrueckii ssp. bulgaricus, L. acidophillus, L. rhamnosus, B. bifidus, S. salivarius ssp. thermophilus, E. faecium, A. oryzae and C. pintolepesii*	1	42	10, 21 ,42	Ile	feed	daily	42	0.5 kg/ton feed, *L. plantarum* (1.89×10^{10} cfu/kg), *L. delbrueckii ssp. bulgaricus* (3.09×10^{10} cfu/kg), *L. acidophillus* (3.09×10^{10} cfu/kg), *L. rhamnosus* (3.09×10^{10} cfu/kg), *B. bifidus* (3.00×10^{10} cfu/kg), *S. salivarius ssp. thermophilus* (6.15×10^{10} cfu/kg), *E. faecium* (8.85×10^{10} cfu/kg), *A. oryzae* (7.98×10^{10} cfu/kg) and *C. pintolepesii* (7.98×10^{10} cfu/kg)

Abbreviation: M = Male, F = Female (for "Sex" column); S = single species, M = Multiple species (for "Microbial species" column); Cae = Caecum, Col = Colon, Cro = Crop, Duo = Duodenum, Ile = Ileum, Exc = Excreta (for "Sampling organ" column); "?"= Unknown

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
7	Deniz et al., 2011	Ross 308	M	No		S	*Bacillus*	*B.subtilis DSM17299*	1	42	42	Cae	feed	daily	42	1g/kg of food (*B.subtilis DSM17299*, 8 x10^5 cfu/kg of food)
8	Fajardo et al., 2012-EX1-1	Sasso X44	"?"	No		S	*Lactobacillus*	*L. casei CECT 4043*	1	42	7, 14, 21, 42	"?"	feed	daily	42	20 ml/kg feed of *L. casei CECT 4043* (3.69 × 10^9 CFU/mL)
	Fajardo et al., 2012-EX1-2							*L. lactis CECT 539*								20 ml/kg feed of *L. lactis CECT 539* (3.34 × 10^9 CFU/mL)
	Fajardo et al., 2012-Ex-2-1	Ross 308						*L. casei CECT 4043*		31	7, 16, 31	Cae			31	20 ml/kg feed of *L. casei CECT 4043* (3.69 × 10^9 CFU/mL)
	Fajardo et al., 2012-Ex-2-2							*L. lactis CECT 539*								20 ml/kg feed of *L. lactis CECT 539* (3.34 × 10^9 CFU/mL)
9	Fujiwara et al., 2009-1	Tsukuba jidori	M	Yes	"?"	S	*Bacillus*	*B. subtilis var.natto*	0	80	80	Cae	feed	daily	80	1% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)
	Fujiwara et al., 2009-2															2% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)
	Fujiwara et al., 2009-3								28	53	80	Cae			53	2% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)
	Fujiwara et al., 2009-1		F						0	80	80	Cae			80	1% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)
	Fujiwara et al., 2009-2															2% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)
	Fujiwara et al., 2009-3								28	53	80				53	2% of Fermented Soybean (*B. subtilis* var.natto, 1 x 10^9 cfu/g)

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
10	Gerard et al., 2008-1	Ross	"?"	No		S	*Lactobacillus*	*Lactobacillus sp. No. I-2673*	1	19	4, 19	Cae	water	daily	19	Drinking water of *Lactobacillus* sp. No. I-2673 (2.7 x 10^6 CFU/ml)
11	Jeong and Kim, 2014-1	Ross 308	M	Yes	Calsporin	S	*Bacillus*	*B. subtilis C-3102*	1	35	35	Ile, Cae, Col, Exc	feed	daily	35	Basal diet + 300 mg of *B. subtilis*/kg of feed (1×10^9 cfu/kg)
	Jeong and Kim, 2014-2															Basal diet + 600 mg of *B. subtilis*/kg of feed (1×10^9 cfu/kg)
12	Jin et al., 1998a-1	Arbor Acre	"?"	No		S	*Lactobacillus*	*L. acidophilus I 26*	1	42	10, 20, 30, 40	Ile, Cae	feed	daily	42	basal diet + 1 g/ kg *L. acidophilus* I 26, (viable cells 1 x 10^9 cells/g)
	Jin et al., 1998a-2					M		*12 strains of Lactobacillus (2 strains of L. acidophilus, 3 strains of L. fermentum, 1 strain of L. crispatus and 6 strains of L. breĺis)*								basal diet + 1g/ kg mixture *Lactobacillus*, (viable cells 1 x 10^9 cells/g)
13	Jin et al., 1996-1	Arbor Acres	M	No		S	*Bacillus*	*B. sutilis*	10	38	17, 24, 31, 38	"?"	feed	daily	38	Basal diet + 0.1% of *B. sutilis* (1 x 10^9 living microorganism/g)
	Jin et al., 1996-2						*Lactobacilli culture*	*Lactobacilli*								Basal diet + 0.2% of *Lactobacillus* (0.5-1 x 10^9 viable cell/g)
	Jin et al., 1996-3															5g of *Lactobacillus* in Drinking water/cage/day (0.5-1 x 10^9 viable cell/g)
14	Jin et al., 1998b-1	Arbor Acre	"?"	No		M	*Four species (L. acidophilus, L. fermentum, L. crispatus, and L. brevis)*	*Twelve strains of Lactobacillus*	1	42	10, 20, 30, 40	Ile, Cae	feed	daily	42	0.05% of *Lactobacillus* culture (LC), 1 x 10^9 cell/g
	Jin et al., 1998b-2															0.10% of *Lactobacillus* culture (LC), 1 x 10^9 cell/g
	Jin et al., 1998b-3															0.15% of Lactobacillus culture (LC), 1 x 10^9 cell/g

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
15	Jung et al., 2008	"?"	M	Yes	Abiasa (company's name)	S	*Bifidobacterium*	*B. lactis D300*	1	40	7, 40	Exc	feed	daily	40	0.15 kg product /25 kg of diet, (300 × 109 cells/g)
16	Kim et al., 2012-1	Ross	"?"	No		M	*Lactobacillus, Bacillus, Saccharomyces*	*L. acidophilus, B. subtilis and S. cerevisiae*	1	35	21, 35	Cae	feed	daily	35	10^7 cfu multi-microbe probiotic/kg of diet
	Kim et al., 2012-2															10^8 cfu multi-microbe probiotic/kg of diet
	Kim et al., 2012-3															10^9 cfu multi-microbe probiotic/kg of diet
17	Lei et al., 2015-1	Arbor Acres	M	No		S	*Bacillus*	*Bacillus amyloliquefaciens*	1	42	21, 42	Cae	feed	daily	42	30 mg/kg (7.5×10^7 cfu/kg) of DFM
	Lei et al., 2015-2															60 mg/kg (1.5×10^8 cfu/kg) of DFM
18	Lin et al., 2011-1	Arbor Acres	"?"	No		S	*Bacillus*	*B. coagulans*	1	42	42	Duo, Cae	feed	daily	42	Basal diet + 0.005% (*B. caogulans*, 8 $\log_{10}$ cfu/g)
	Lin et al., 2011-2															Basal diet + 0.02% (*B. caogulans*, 8 $\log_{10}$ cfu/g)
	Lin et al., 2011-3															Basal diet + 0.04% (*B. caogulans*, 8 $\log_{10}$ cfu/g)
19	Liu et al., 2007	Arbor Acres	M& F	No		S	*Lactobacillus*	*L. reuteri Pg4*	1	37	21, 37	Ile, Cae	feed	daily	37	1 g *L. reuteri Pg4* powder/kg feed, (10^9 cfu/g)
20	Milián et al., 2013-1	Cuban EB24	"?"	No		S	*Bacillus*	*B. subtilis*	1	42	21, 42	Cae	feed	daily	42	Dosage of 10^9 endospores/g of concentrates (biopreparation C-31)
	Milián et al., 2013-2															Dosage of 10^9 endospores/g of concentrates (biopreparation C-34)
	Milián et al., 2013-3															Dosage of 10^9 endospores/g of concentrates (biopreparation E-44)

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
21	Mohammadi Gheisar et al., 2016-1	Ross 308	M& F	Yes	Lactiferm	S	*Enterococcus*	*E. faecium M74*	1	35	35	Exc	feed	daily	35	0.25% probiotic (3×10^{11} CFU/g) of feed
	Mohammadi Gheisar et al., 2016-2															0.50% probiotic (3×10^{11} CFU/g) of feed
22	Mookiah et al., 2014	Ross 308	M	No		M	*Lactobacillus*	*The 11 Lactobacillus strains (L. reuteri C 1, C 10 and C 16; L. gallinarum I 16 and I 26; L. brevis I 12, I 23, I 25, I 218 and I 211, and L. salivarius I 24)*	1	42	21, 42	Cae	feed	daily	42	1g of probiotic/kg feed
23	Mountzouris et al., 2015	Cobb	M	Yes	Levucell SB 20	S	*Saccharomyces cerevisae var. boulardii CNCM I-1079*	*S. cerevisae var. boulardii CNCM I-1079*	1	35	15, 35	Cae	feed	daily	35	50 mg /kg diet (*S. cerevisae*, 1×10^9 cfu)
24	Mountzouris et al., 2007-1	Cobb	M	Yes	Biomin Poultry5Star	M	*Lactobacillus, Enterococcus, Bifidobacterium, Pediococcus*	*L. reuteri, L. salivarius, E. faecium, B. animalis and P. acidilactici*	1	42	42	Cae	feed and water	daily	42	1 g/kg of feed and 1 g/kg in water (feed= 6weeks, Water= first 4weeks, 2×10^{12} cfu/kg of product)
	Mountzouris et al., 2007-2												feed			1 g/kg of feed, 2×10^{12} cfu/kg of product.
25	Mountzouris et al., 2010-1	Cobb	M	Yes	PoultryStar ME	M	*Lactobacillus, Enterococcus, Bifidobacterium, Pediococcus*	*L. reuteri DSM 16350, L. salivarius DSM 16351, E. faecium DSM 16211, B. animalis DSM 16284 and P. acidilactici DSM 16210*	1	42	14, 28, 42	Cae	feed	daily	42	1 g/kg of diet, 1×10^8 cfu/kg of product.
	Mountzouris et al., 2010-2															1 g/kg of diet, 1×10^9 cfu/kg of product.
	Mountzouris et al., 2010-3															1 g/kg of diet, 1×10^{10} cfu/kg of product.

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
26	Park and Kim, 2014-1	Ross 308	M	No		S	*Bacillus*	*Bacillus subtilis B2A*	1	28	28	Col, "?"	feed	daily	28	*B. subtilis B2A* 1.1×10^4 cfu/g of feed.
	Park and Kim, 2014-2															*B. subtilis B2A* 1.0×10^5 cfu/g of feed.
	Park and Kim, 2014-3															*B. subtilis B2A* 1.0×10^6 cfu/g of feed.
27	Peng et al., 2016-1	Arbor Acres	"?"	No		S	*Lactobacillus*	*L. plantarum B1*	1	21	21	Cae	feed	daily	21	*L. plantarum B1* (2×10^9 cfu/kg), from 1-21 day
	Peng et al., 2016-2								22		42					*L. plantarum B1* (2×10^9 cfu/kg), from 22-42 day
	Peng et al., 2016-3								1	42	21, 42				42	*L. plantarum B1* (2×10^9 cfu/kg), from 1-42 day
28	Rada and Marounek, 1997	Ross	"?"	No		S	*Lactobacillus*	*L. salivarus 51R*	1-6h	5	1, 5	Cro, Cae	gavage	once	5	0.2 ml (5×10^8 cfu/ml)
29	Rodriguez et al., 2012	Cobb	M	Yes	Cylactin	S	*Enterococcus*	*E. faecium*	1	28	28	Ile, Cae	feed	daily	28	Cylactin (2 g/kg basal diet)
30	Salim et al., 2013-1	Ross 308	M	Yes	"?"	S	*Lactobacillus*	*L. reuteri*	1	35	35	Cae	feed	daily	35	0.1% DFM in feed (*L. reuteri*)
	Salim et al., 2013-2					M	*Lactobacillus, Bacillus and Saccharomyces*	*L. reuteri, B. subtilis, and S. cerevisiae*								0.1% DFM in feed (*L. reuteri*, *B. subtilis*, and *S. cerevisiae*)
31	Samli et al., 2007	Ross 308	M	Yes	CYLACTIN	S	*Enterococcus*	*E. faecium NCIMB 10415*	1	21	21	Ile, Exc	feed	daily	21	1×10^{10} cfu/g
32	Sen et al., 2012-1	Ross	"?"	No		S	*Bacillus*	*Bacillus subtilis LS 1-2*	1	35	21, 35	Cae	feed	daily	35	0.15% of *B. subtilis* LS 1-2.
	Sen et al., 2012-2															0.30% of *B. subtilis* LS 1-2.
	Sen et al., 2012-3															0.45% of *B. subtilis* LS 1-2.
33	Shams Shargh et al., 2012	Ross 308	M	Yes	Protexin	M	*Lactobacillus, Streptococcus, Aspergillus, Bifidobacterium, Enterococcus, and Candida*	*L. acidophilus, L. plantarum, L. rhamnosus, L. bulgaricus, S. thermophilus, A. oryzae, B. bifidum, E. faecium, and C. pintolepesii*	1	42	20, 40	Cro, Cae	water	daily	42	Protexin (1,000 ppm for 0-7d, 500 ppm for 8-21d and 250 ppm for 22-42d)

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
34	Shen et al., 2014	Cobb500	M& F	No		S	*Lactobacillus*	*L. plantarum*	1	42	21, 42	Cae	feed	daily	42	Basal diet 1 g/kg (0.1%, m/m), 1 × 10^9 cfu/mL
35	Shim et al., 2012-1	Ross 308	M	No		M	*Lactobacillus, Bacillus, Saccharomyces and Aspergillus*	*L. acidophilus, B. sutilis, S. cerevisiae, A. oryzae*	1	35	21, 35	Cae	feed	daily	35	Basal diet + 0.30% of LT probiotic (*L. acidophilus* (4.0 x 10^8 cfu/g), *B. sutilis* (4.8 x 10^9 cfu/g), *S. cerevisiae* (1.0 x 10^4 cfu/g) and *A. oryzae* (4.3 x 10^7 cfu/g)
	Shim et al., 2012-2															Basal diet + 0.30% of LT probiotic (*L. acidophilus* (1.0 x 10^2 cfu/g), *B. sutilis* (2.0 x 10^4 cfu/g), *S. cerevisiae* (1.2 x 10^2 cfu/g) and *A. oryzae* (1.0 x 10^3 cfu/g)
36	Wu et al., 2011-1	"?"	M	No		S	*Bacillus*	*Bacillus sp. KD1 and Bacillus sp. YB*	1	42	21, 42	Col	feed	daily	42	*Bacillus sp. KD1* 0.05% of diet weight, (10^9 bacilli/kg of feed)
	Wu et al., 2011-2															*Bacillus sp. KD1* 0.25% of diet weight, (5 × 10^9 bacilli/kg of feed)
	Wu et al., 2011-3															*Bacillus sp. KD1* 0.5% of diet weight, (10^{10} bacilli/kg of feed)
	Wu et al., 2011-4															*Bacillus sp. YB* 0.05% of diet weight, (10^9 bacilli/kg of feed)
	Wu et al., 2011-5															*Bacillus sp. YB* 0.25% of diet weight, (5 × 10^9 bacilli/kg of feed)
	Wu et al., 2011-6															*Bacillus sp. YB* 0.5% of diet weight, (10^{10} bacilli/kg of feed)
37	Yakhkeshi et al., 2012	Ross 308	M	Yes	Primalac	"?"			1	42	42	Cro, Ile, Cae	feed	daily	42	0.1% of diet

Table S 1. (Cont.)

No.	Author	Breed	Sex	Commercial product (s)	Product name	Microbial species	Species	Strain	Age of treatment	Duration of treatment	Sampling age	Sampling organ	Applied route	Applied frequency	Applied period (days)	Dose
38	Yanget al., 2012-1	Lingnan Yellow	M	Yes	"?"	S	*Clostridium*	*C. butyricum HJCB998*	1	42	3, 5, 7, 14, 21, 42	Cae	feed	daily	42	Basal diet containing 1×10^7 cfu *C. Butyricum*/kg
	Yanget al., 2012-2							*C. butyricum HJCB998*								Basal diet containing 2×10^7 cfu *C. Butyricum*/kg
	Yanget al., 2012-3							*C. butyricum HJCB998*								Basal diet containing 3×10^7 cfu *C. Butyricum*/kg
39	Yu et al., 2007	Arbor Acres	M& F	No		S	*Lactobacillus*	*L. reuteri Pg4*	1	42	1, 3, 7, 14, 28, 42	Cro, Ile, Cae	feed	daily	42	0.1% L. reuteri Pg4 powder (10^8 CFU/g)
40	Zhang et al., 2016-1	Ross 308	M	No		S	*Lactococcus*	*L. garvieae B301*	1	28	14	Cae	feed	daily	28	Basal diet plus 3.36 x 10^9 cfu/kg of L. garvieae B301
	Zhang et al., 2016-2										28					Basal diet plus 3.36 x 10^9 cfu/kg of L. garvieae B301
41	Zhang et al., 2013	Arbor Acres	M& F	No		S	*Bacillus*	*B. subtilis UBT-MO$_2$*	1	35	35	Cae, "?"	feed	daily	35	10^5 cfu/kg of feed
42	Zhang and Kim, 2014-1	Ross 308	M& F	Yes	Probion	M	*Lactobacillus, Bacillus, Clostridium*	*L. acidophilus, B. subtilis DSM 17299, and C. butyricum*	1	35	35	Cae	feed	daily	35	Starter diet 1.07×10^5 cfu/kg and Grower diet 1.12×10^5 cfu/kg
	Zhang and Kim, 2014-2															Starter diet 2.11×10^5 cfu/kg and Grower diet 2.09×10^5 cfu/kg

Table S2. Risk of bias assessment

Authors\RoB	1.Was the allocation sequence adequately generated and applied?	2.Were the groups similar at baseline or were they adjusted for confounders in the analysis?	3.Was the allocation adequately concealed?	4.Were the animals randomly housed during the experiment?	5.Were the caregivers and/or investigators blinded from knowledge which intervention each animal received during the experiment?	6. Were animals selected at random for outcome assessment?	7.Was the outcome assessor blinded?	8.Were incomplete outcome data adequately addressed?	9.Are reports of the study free of selective outcome reporting?	10.Was the study apparently free of other problems that could result in high risk of bias?
Abudabos et al., 2015	No	Yes	?	Yes	?	No	Yes	Yes	?	?
Ahmed et al., 2014	?	Yes	?	Yes	?	Yes	Yes	Yes	?	?
Altaher et al., 2015	?	Yes	?	?	?	No	Yes	Yes	?	?
Boostani et al., 2013	?	Yes	?	Yes	?	Yes	Yes	Yes	?	?
Dabiri et al., 2009	?	?	?	?	?	No	Yes	Yes	?	?
Daşkiran et al., 2012	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Deniz et al., 2011	?	Yes	?	?	?	No	Yes	Yes	?	?
Fajardo et al., 2012	No	?	?	?	?	Yes	Yes	Yes	?	?
Fujiwara et al., 2009	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Gerard et al., 2008	?	?	?	?	?	No	Yes	?	?	?
Jeong and Kim, 2014	?	Yes	?	Yes	?	Yes	Yes	Yes	?	?
Jin et al., 1998a	?	?	?	?	?	Yes	Yes	Yes	?	?
Jin et al., 1996	?	?	?	?	?	Yes	Yes	Yes	?	?
Jin et al., 1998b	?	?	?	?	?	Yes	Yes	Yes	?	?
Jung et al., 2008	?	?	?	?	?	Yes	Yes	Yes	?	?
Kim et al., 2012	?	?	?	?	?	No	Yes	Yes	?	?
Lei et al., 2015	?	Yes	?	Yes	?	Yes	Yes	Yes	?	?
Lin et al., 2011	?	?	?	?	?	No	Yes	Yes	?	?
Liu et al., 2007	?	?	?	?	?	No	Yes	Yes	?	?
Milián et al., 2013	?	?	?	?	?	No	Yes	Yes	?	?

Mohammadi Gheisar et al., 2016	No	?	No	?	?	Yes	Yes	Yes	?	?
Authors\RoB	1.Was the allocation sequence adequately generated and applied?	2.Were the groups similar at baseline or were they adjusted for confounders in the analysis?	3.Was the allocation adequately concealed?	4.Were the animals randomly housed during the experiment?	5.Were the caregivers and/or investigators blinded from knowledge which intervention each animal received during the experiment?	6. Were animals selected at random for outcome assessment?	7.Was the outcome assessor blinded?	8.Were incomplete outcome data adequately addressed?	9.Are reports of the study free of selective outcome reporting?	10.Was the study apparently free of other problems that could result in high risk of bias?
Mookiah et al., 2014	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Mountzouris et al., 2015	?	Yes	?	Yes	?	No	Yes	Yes	?	?
Mountzouris et al., 2007	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Mountzouris et al., 2010	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Park and Kim, 2014	No	Yes	?	?	?	No	Yes	Yes	?	?
Peng et al., 2016	?	?	?	?	?	Yes	Yes	Yes	?	?
Rada and Marounek, 1997	No	Yes	?	?	?	No	Yes	Yes	?	?
Rodriguez et al., 2012	No	Yes	?	?	?	No	Yes	Yes	?	?
Salim et al., 2013	?	Yes	?	Yes	?	No	Yes	Yes	?	?
Samli et al., 2007	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Sen et al., 2012	?	?	?	?	?	No	Yes	Yes	?	?
Shams Shargh et al., 2012	?	Yes	?	Yes	?	No	Yes	Yes	?	?
Shen et al., 2014	?	?	?	?	?	Yes	Yes	Yes	?	?
Shim et al., 2012	?	Yes	?	?	?	No	Yes	Yes	?	?
Wu et al., 2011	?	?	?	Yes	?	Yes	Yes	Yes	?	?
Yakhkeshi et al., 2012	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Yang et al., 2012	?	Yes	?	Yes	?	No	Yes	Yes	?	?
Yu et al., 2007	?	?	?	Yes	?	No	Yes	Yes	?	?
Zhang et al., 2016	?	Yes	?	?	?	Yes	Yes	Yes	?	?
Zhang et al., 2013	?	?	?	?	?	Yes	Yes	Yes	?	?
Zhang and Kim, 2014	?	?	?	Yes	?	No	Yes	Yes	?	?

Table S3. Additional subgroup analysis of DFM genus on the log concentrations of *Lactobacillus* in broiler chickens

Characteristics and subgroups	Effect size				Heterogeneity			p value for subgroup difference
	n[1)]	SMD	[95% CI]	p value	Q	p value	I^2	
DFM genus[2)]								
Bacillus	55	1.17	[0.80, 1.54]	<0.001	294.29	<0.001	82	0.016
Clostridium	18	0.57	[0.22, 0.91]	0.001	26.11	0.073	35	
Enterococcus	6	2.20	[0.55, 3.85]	0.009	90.25	<0.001	94	
Lactobacillus	59	1.22	[0.87, 1.57]	<0.001	191.50	<0.001	70	
Overall	138	0.99	[0.79, 1.20]	<0.001	636.58	<0.001	78	

CI, confidence interval; SMD, standardized mean difference.

[1)] n, number of comparisons.

[2)] genus with less than four comparisons, multiple species, unknown species of DFM were excluded from the subgroup analysis.

Table S4. Additional subgroup analysis of DFM genus on the log concentrations of coliforms and *Escherichia coli* in broiler chickens

Characteristics and subgroups	Effect size				Heterogeneity			p value for subgroup difference
	n[1)]	SMD	[95% CI]	p value	Q	p value	I^2	
DFM genus[2)]								
Bacillus	53	-1.55	[-1.93, -1.18]	<0.001	269.27	<0.001	81	0.001
Clostridium	18	-0.82	[-1.31, -0.33]	0.001	47.52	<0.001	64	
Enterococcus	4	-0.45	[-1.20, 0.29]	0.234	11.87	0.008	75	
Lactobacillus	47	-0.59	[-0.96, -0.23]	0.002	178.66	<0.001	74	
Overall	122	-0.96	[-1.18, -0.74]	<0.001	543.21	<0.001	78	

CI, confidence interval; SMD, standardized mean difference.

[1)] n, number of comparisons.

[2)] genus with less than four comparisons, multiple species, unknown species of DFM were excluded from the subgroup analysis.

Table S5. References for all included studies.

No.	References
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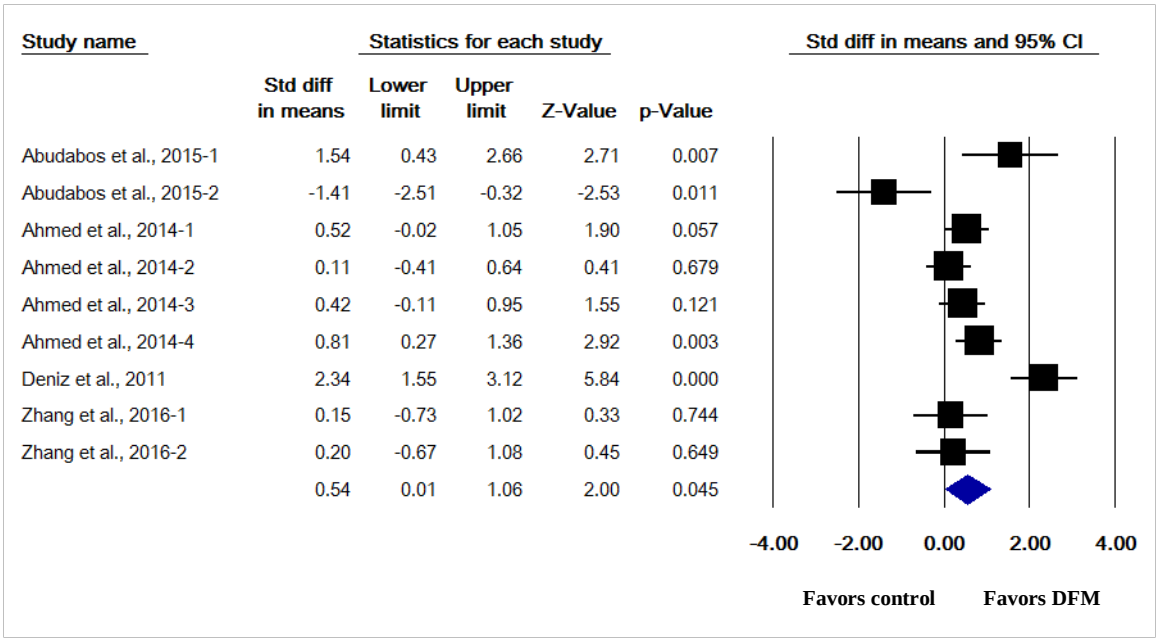

Figure S1. Forest plot for the effect of DFM supplementation on the log concentrations of *Bacillus* in the gut of broiler chickens.

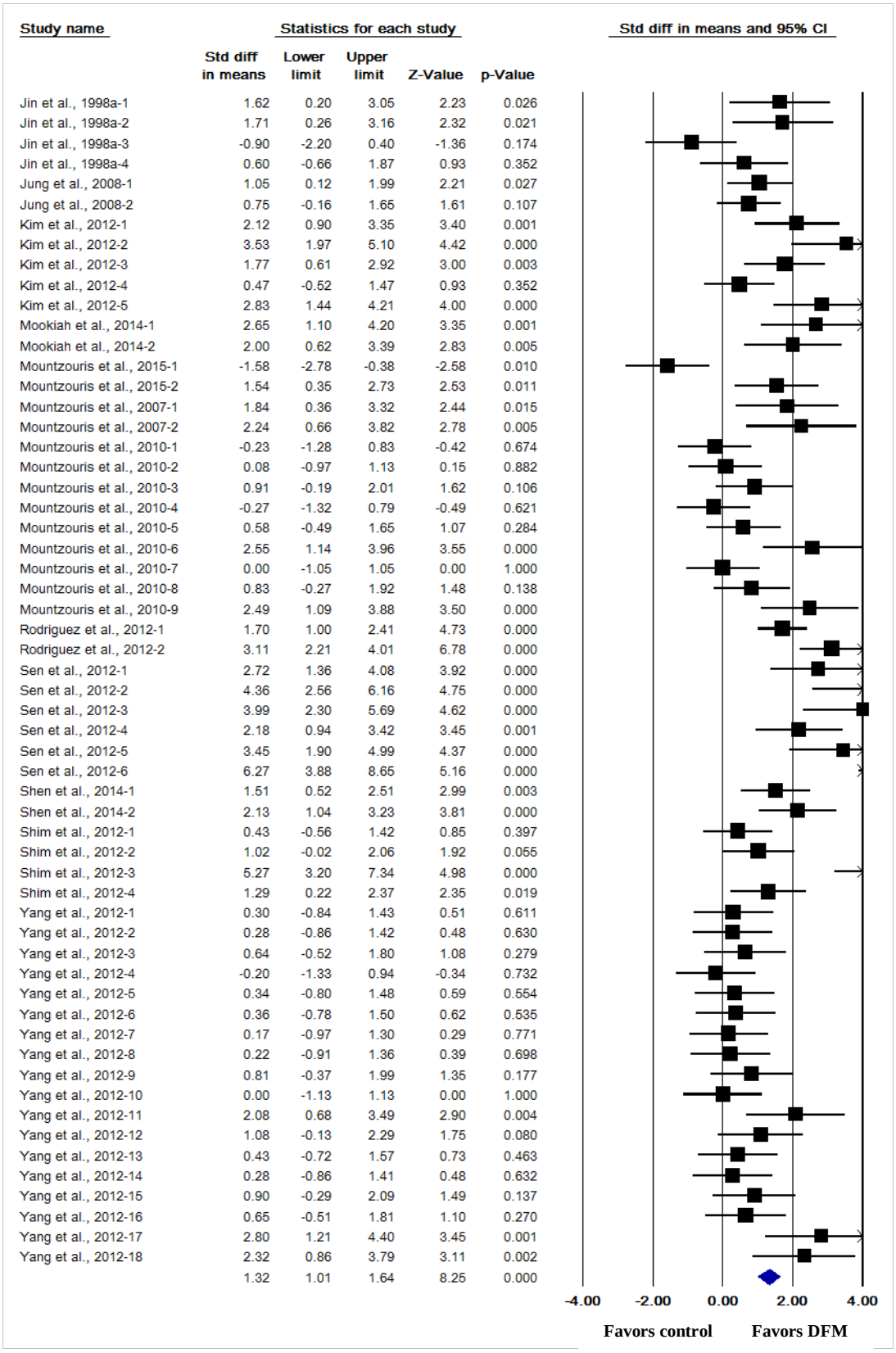

Figure S2. Forest plot for the effect of DFM supplementation on the log concentrations of *Bifidobacterium* in the gut of broiler chickens.

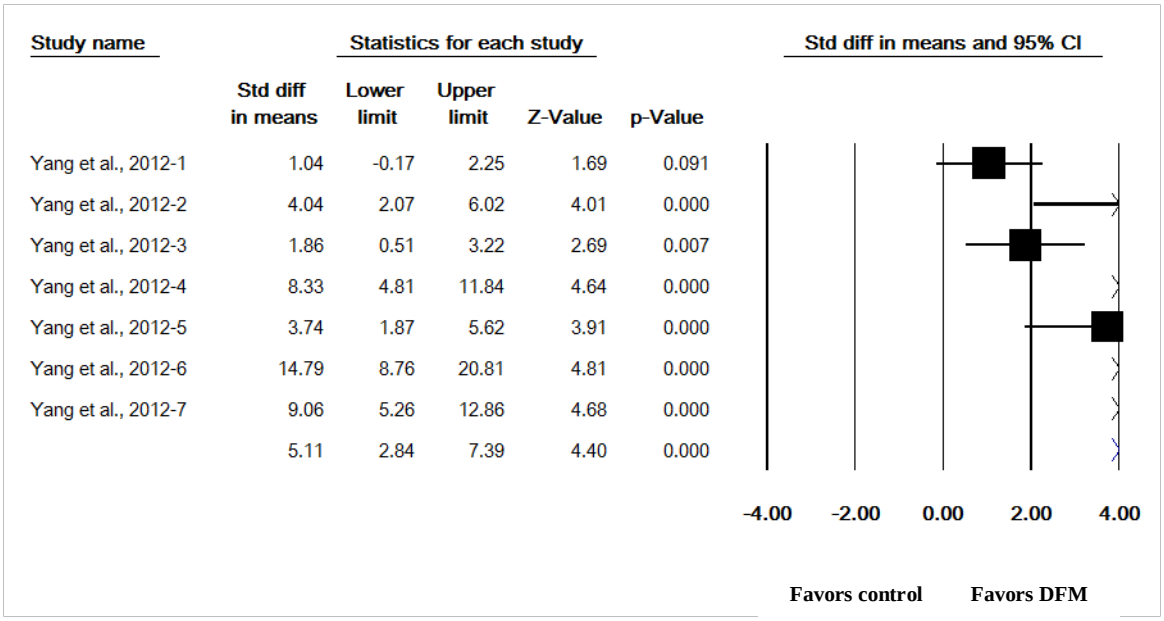

Figure S3. Forest plot for the effect of DFM supplementation on the log concentrations of *Clostridium butyricum* in the gut of broiler chickens.

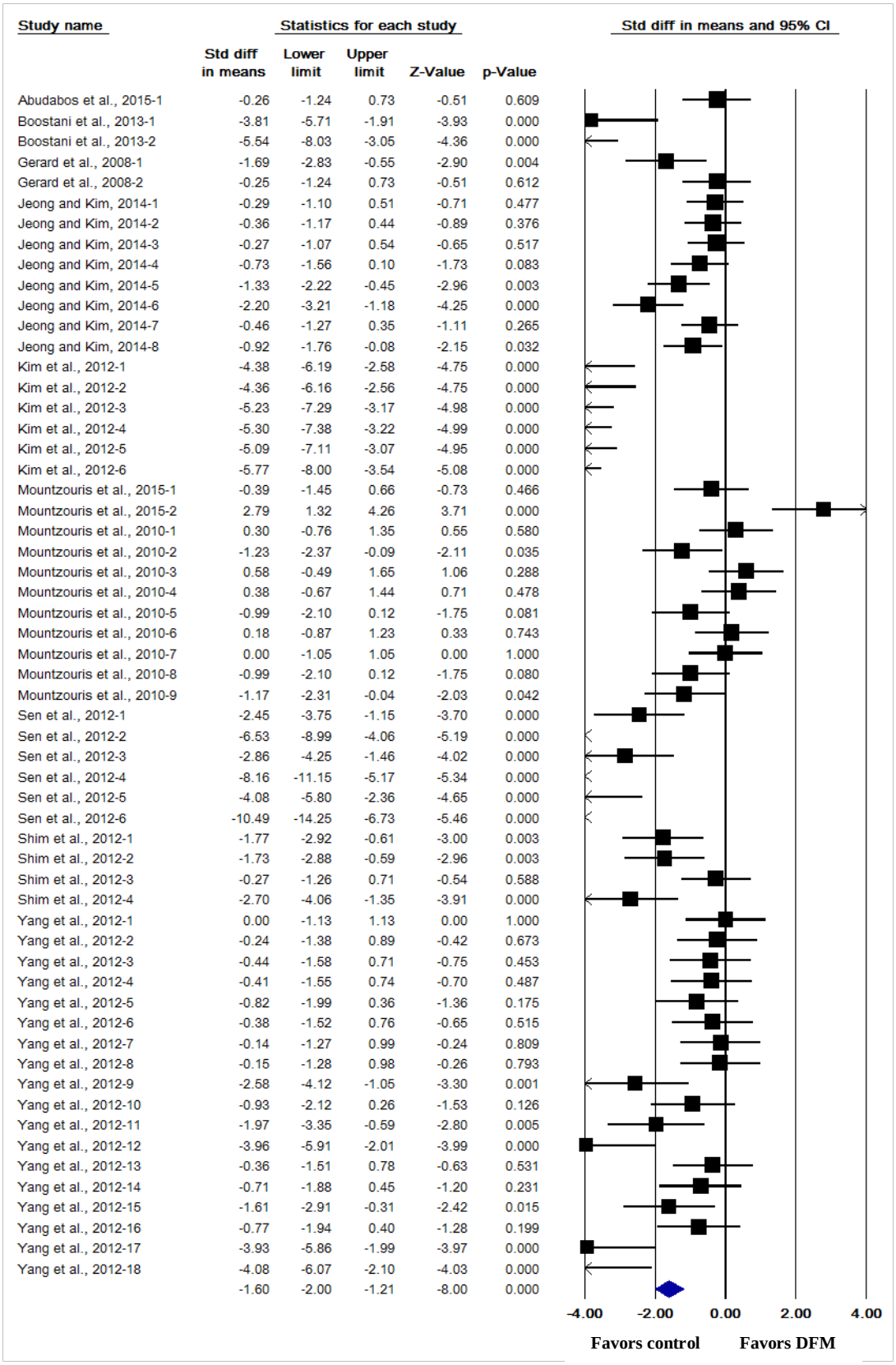

Figure S4. Forest plot for the effect of DFM supplementation on the log concentrations of *Clostridium perfringens* in the gut of broiler chickens.

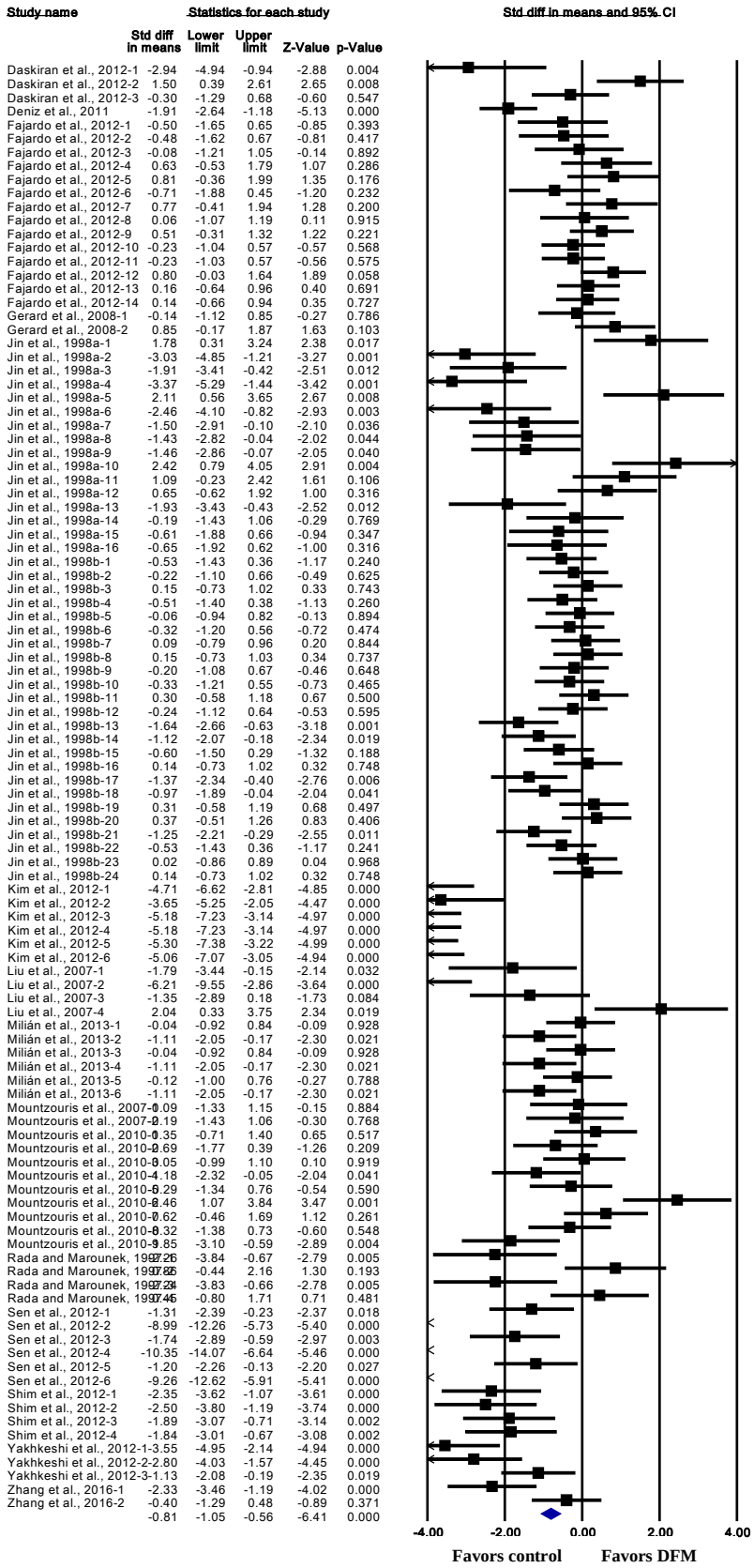

Figure S5. Forest plot for the effect of DFM supplementation on the log concentrations of coliforms in the gut of broiler chickens.

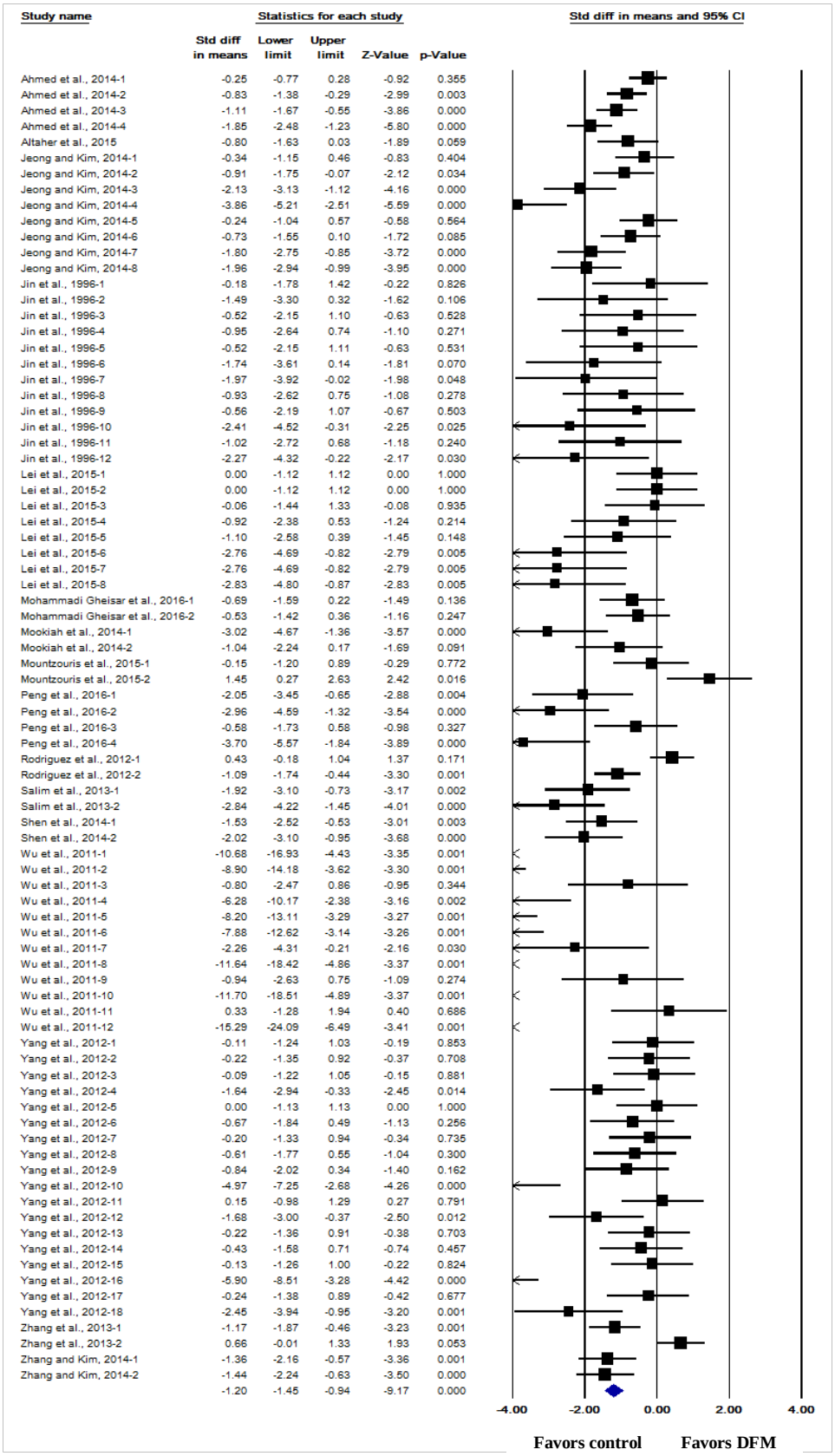

Figure S6. Forest plot for the effect of DFM supplementation on the log concentrations of *Escherichia coli* in the gut of broiler chickens.

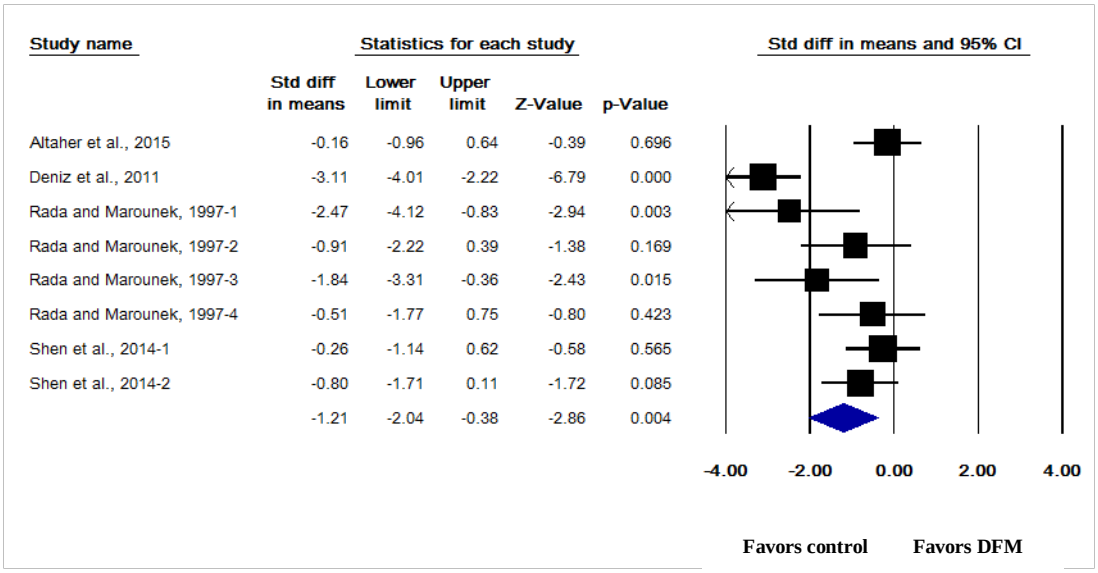

Figure S7. Forest plot for the effect of DFM supplementation on the log concentrations of *Enterococcus* in the gut of broiler chickens.

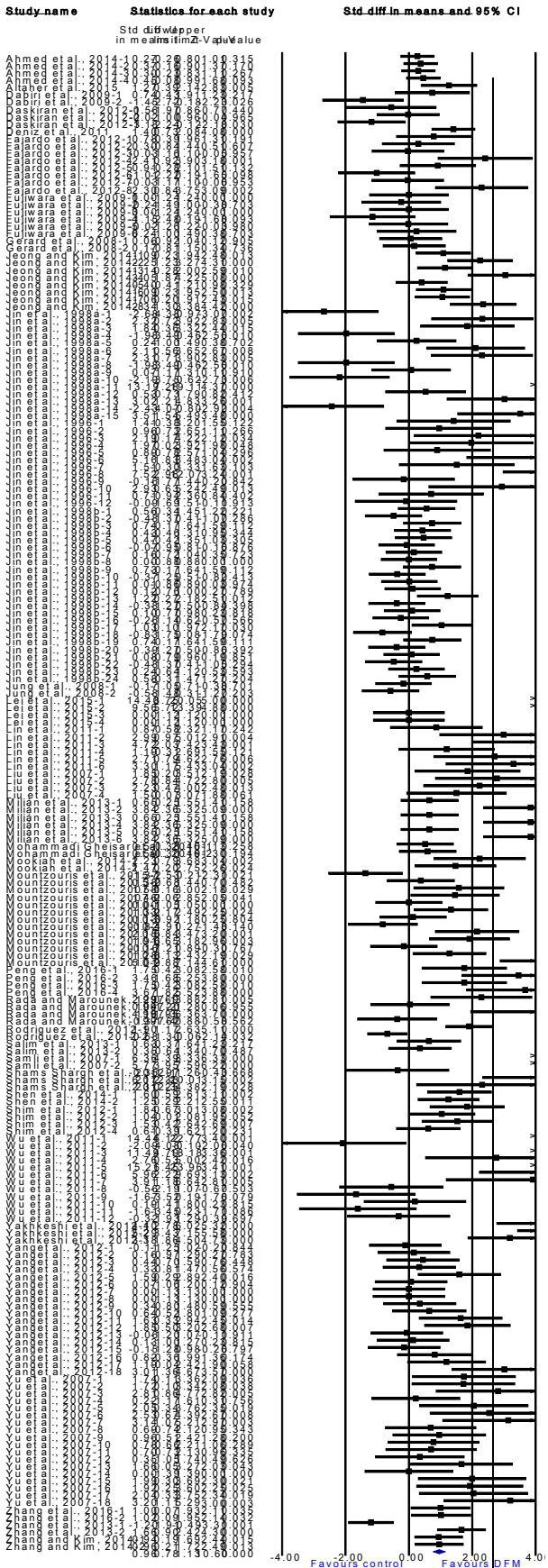

Figure S8. A forest plot for the effect of DFM supplementation on the log concentrations of *Lactobacillus* in the gut of broiler chickens.

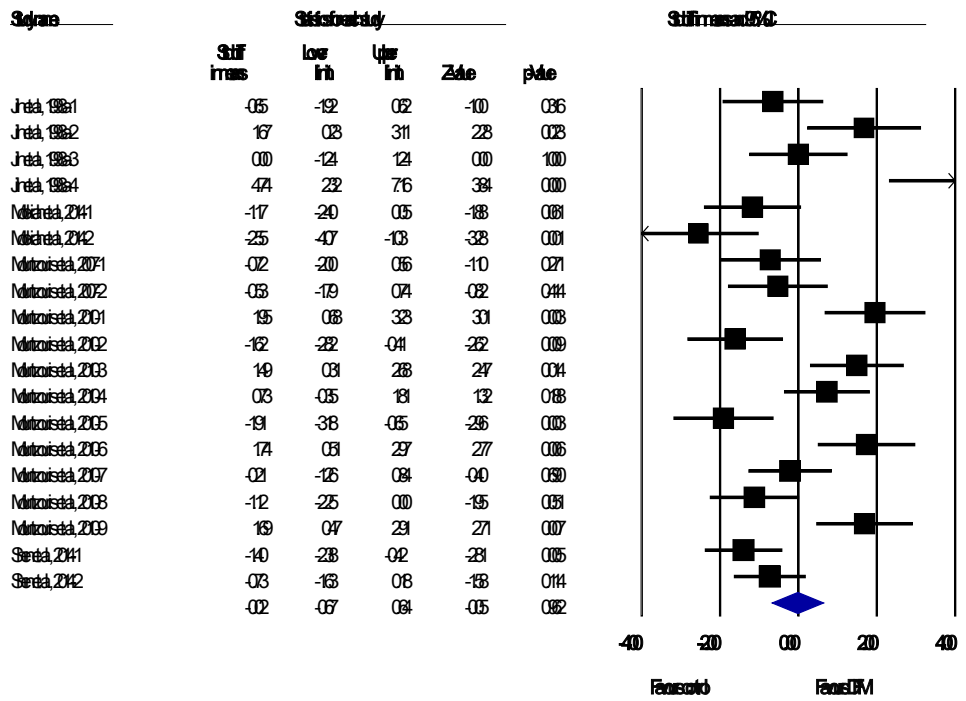

Figure S9. Forest plot for the effect of DFM supplementation on the log concentrations of aerobes in the gut of broiler chickens.

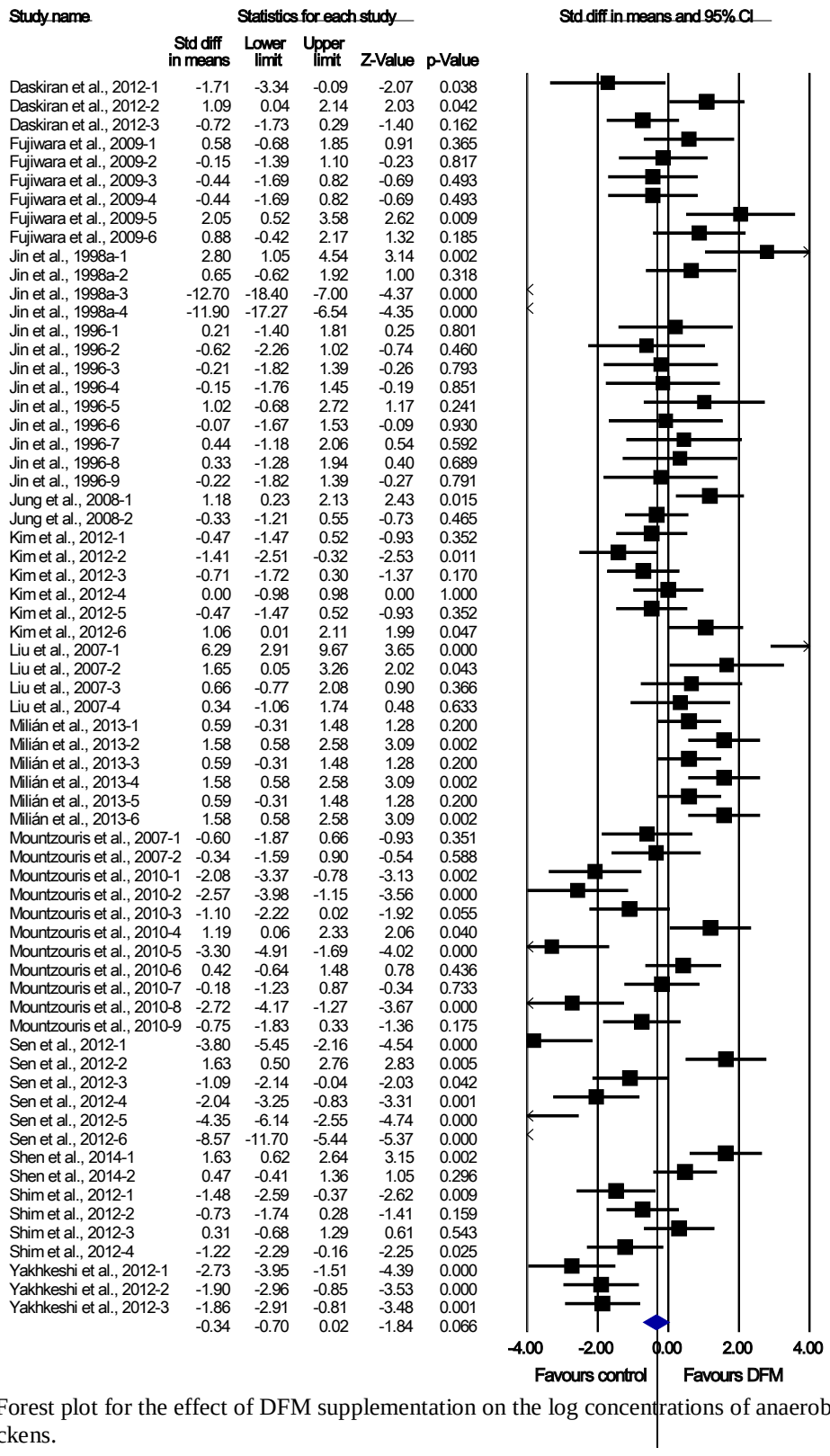

Figure S10. Forest plot for the effect of DFM supplementation on the log concentrations of anaerobes in the gut of broiler chickens.

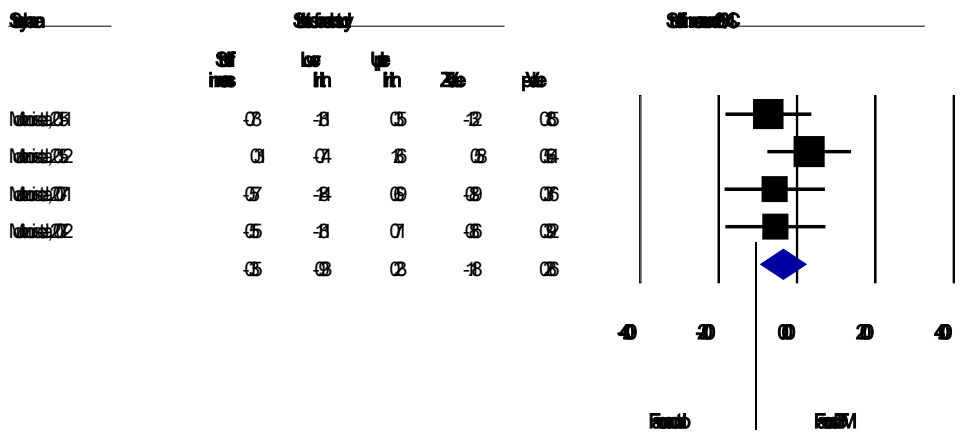

Figure S11. Forest plot for the effect of DFM supplementation on the log concentrations of *Bacteroides* in the gut of broiler chickens.

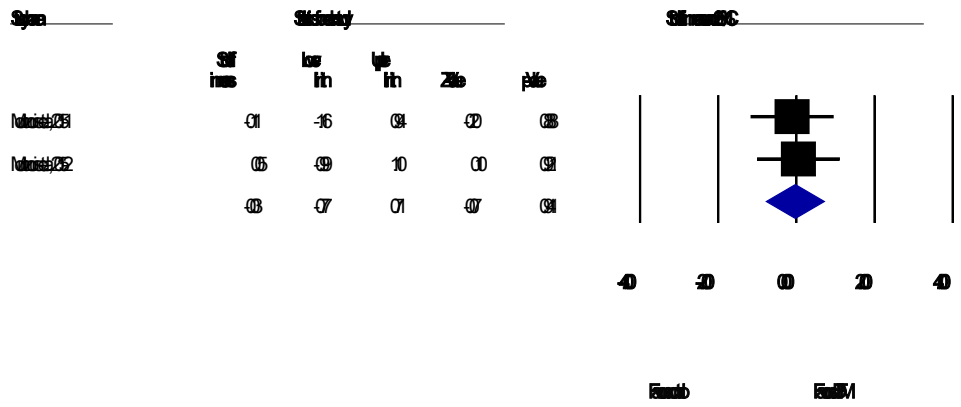

Figure S12. Forest plot for the effect of DFM supplementation on the log concentrations of *Clostridium coccoides* in the gut of broiler chickens.

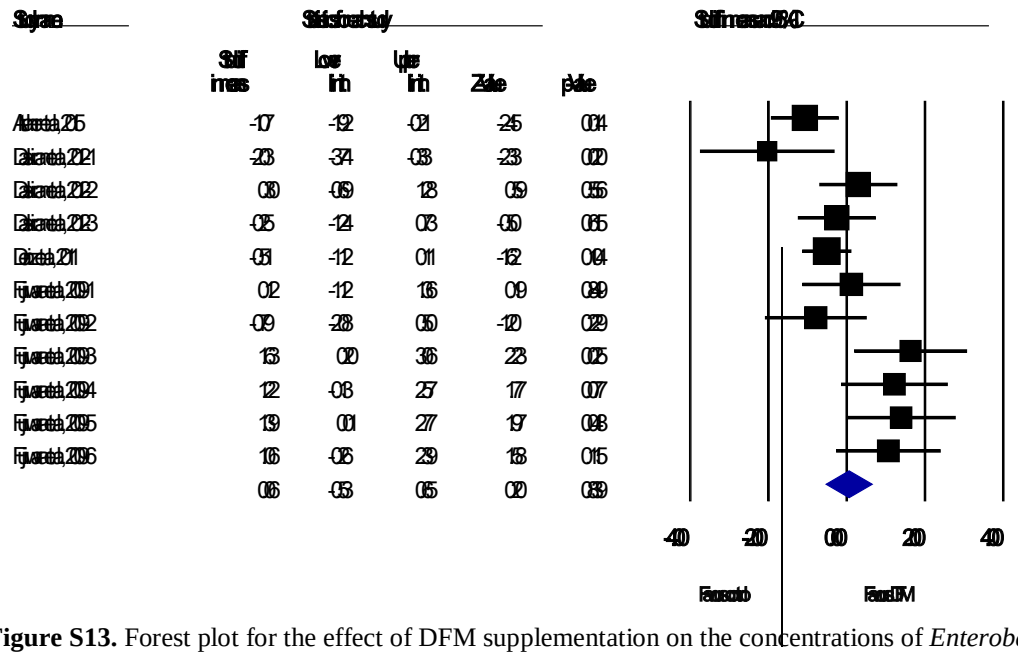

Figure S13. Forest plot for the effect of DFM supplementation on the concentrations of *Enterobateriaceae* in the gut of broiler chickens.

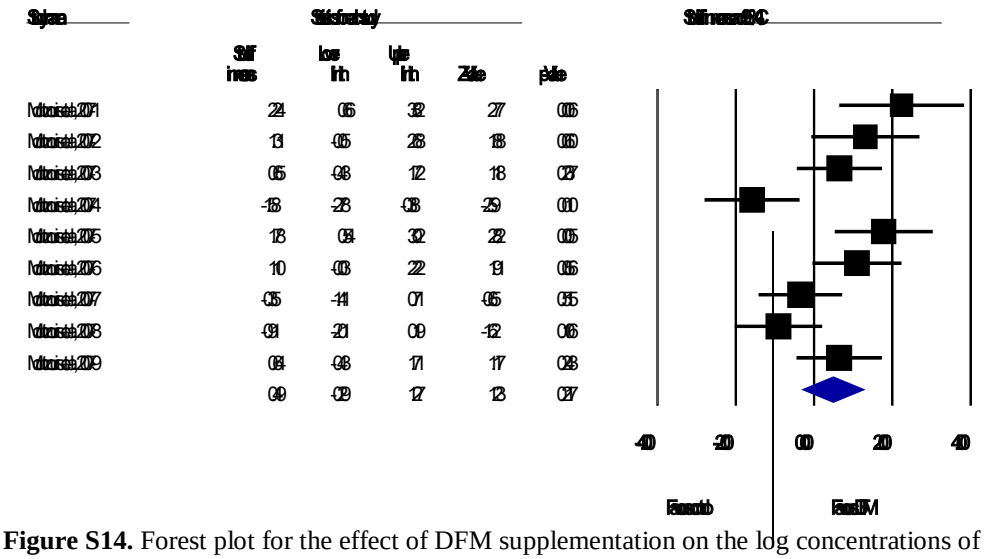

Figure S14. Forest plot for the effect of DFM supplementation on the log concentrations of Gram positive cocci in the gut of broiler chickens.

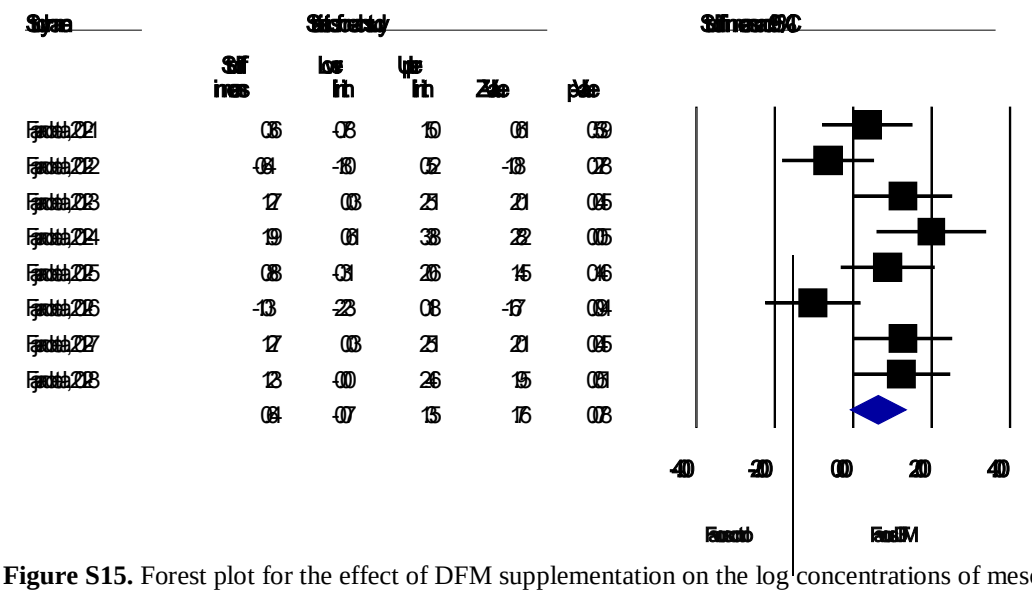

Figure S15. Forest plot for the effect of DFM supplementation on the log concentrations of mesophilic bacteria in the gut of broiler chickens.

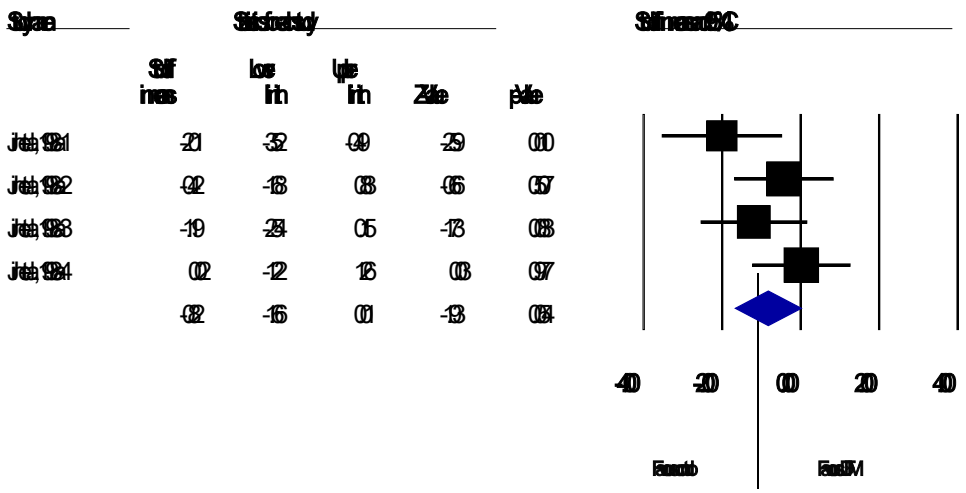

Figure S16. Forest plot for the effect of DFM supplementation on the log concentrations of *Streptococcus* in the gut of broiler chickens.

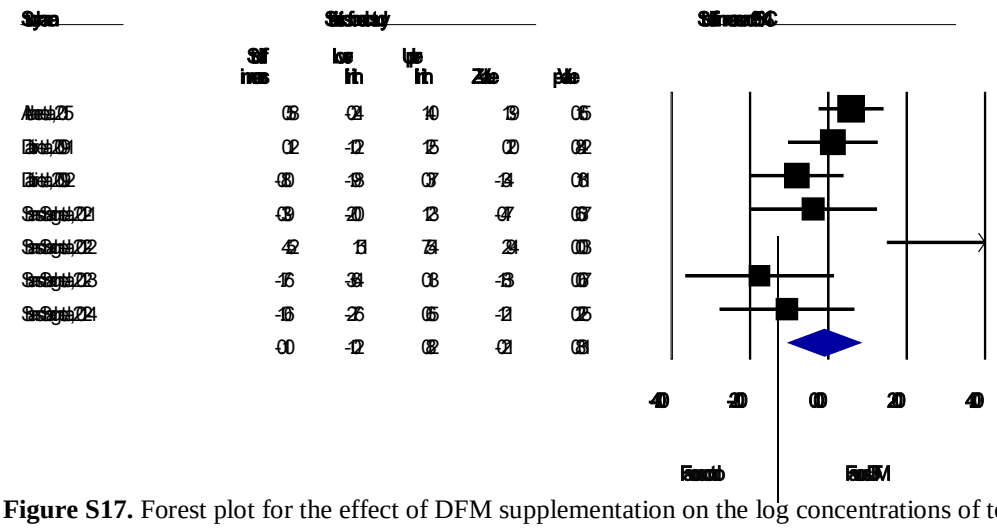

Figure S17. Forest plot for the effect of DFM supplementation on the log concentrations of total bacterial counts in the gut of broiler chickens.