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Long-term effects of oral tea polyphenols and *Lactobacillus brevis* M8 on biochemical parameters, digestive enzymes, and cytokines expression in broilers

Key words: Tea polyphenols, *Lactobacillus brevis*, Cytokines, Broilers

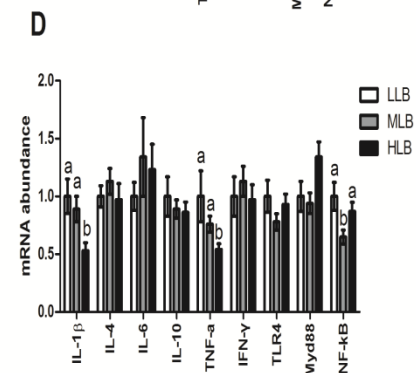
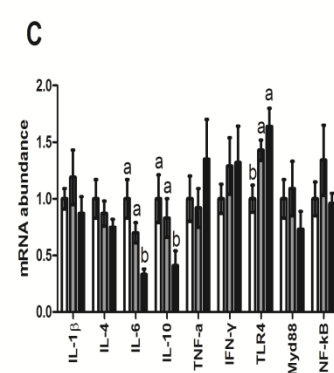
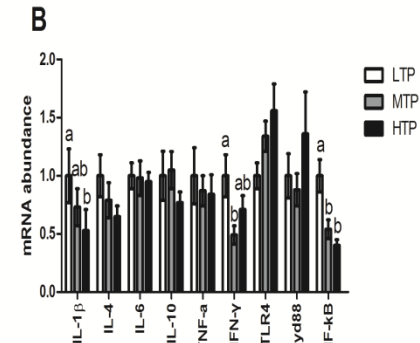
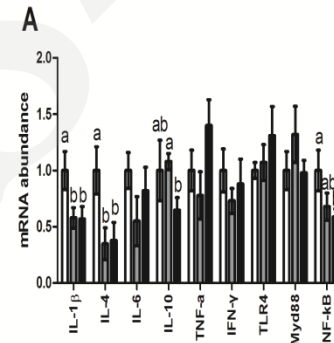
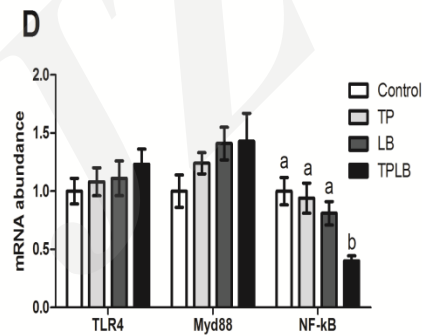
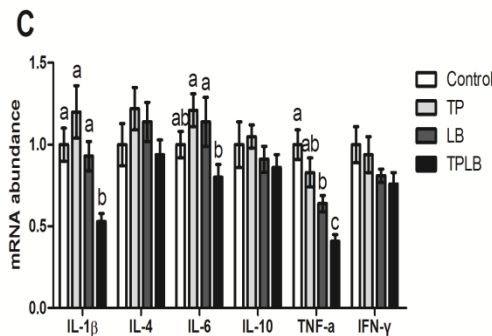
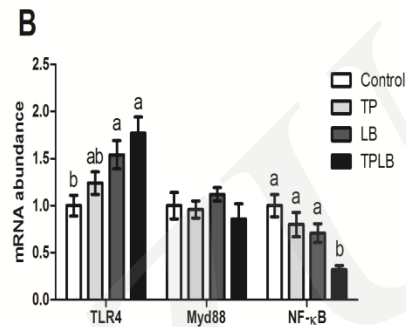
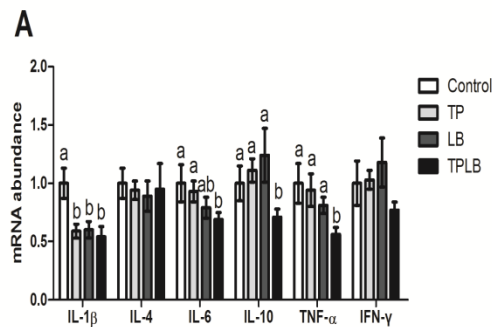
Research Summary

This study investigated the long-term effects of oral tea polyphenols (TP) and Lactobacillus brevis M8 (LB) in broilers:

- **biochemical parameters**
- **digestive enzymes**
- **cytokines expression**
- **Nf-kB signal**

Innovation points

- Investigation of co-administration of tea polyphenols and *Lactobacillus brevis* M8 in broilers.



Innovation points

Table 1 | Effects of TP and LB on serum biochemical parameters in broilers.

Groups	LDL-C	GLU	TG	CHO	HDL-C
Experiment1					
Control	1.36±0.11 ^a	10.89±0.61	0.44±0.04 ^a	3.43±0.45	2.13±0.09 ^a
TP	0.92±0.02 ^{bc}	8.62±0.24	0.34±0.05 ^b	3.18±0.18	1.86±0.38 ^b
LB	1.03±0.13 ^b	11.32±0.74	0.26±0.01 ^b	2.65±0.68	2.09±0.07 ^{ab}
TPLB	0.88±0.03 ^c	12.86±0.63	0.15±0.01 ^c	3.14±0.23	2.05±0.05 ^{ab}
Experiment2					
LT	0.51±0.05 ^b	11.02±0.50	0.19±0.05	3.37±0.06 ^a	2.20±0.04 ^a
MT	0.88±0.03 ^a	12.86±0.33	0.15±0.03	3.14±0.04 ^{ab}	2.05±0.05 ^b
HT	0.56±0.03 ^b	12.89±0.24	0.14±0.02	2.82±0.10 ^b	2.04±0.04 ^b
Experiment3					
LL	0.84±0.09	11.33±0.43 ^b	0.40±0.02 ^a	3.23±0.08	2.23±0.06
ML	0.88±0.03	12.86±0.33 ^{ab}	0.15±0.01 ^b	3.14±0.04	2.05±0.05
HL	0.80±0.07	13.45±0.78 ^a	0.12±0.01 ^b	3.06±0.08	2.27±0.08

Innovation points

Table 2 | Effects of TP and LB on digestive enzymes in broilers.

Items	Control	TP	LB	TPLB
Intestinal amylase	0.53±0.04	0.45±0.07	0.59±0.08	0.64±0.04
Pancreatic amylase	0.76±0.07	0.71±0.04	0.77±0.02	0.78±0.01
Intestinal lipase	177.67±7.59 ^a	137.39±5.04 ^b	142.00±10.13 ^b	144.40±6.74 ^b
Pancreatic lipase	162.82±8.76 ^b	215.70±10.75 ^a	194.53±3.48 ^{ab}	217.58±4.15 ^a
Proventriculus pepsin	5.82±0.87 ^{ab}	3.05±0.08 ^b	5.28±0.46 ^{ab}	6.39±0.43 ^a
Intestinal trypsin	0.20±0.02	0.22±0.05	0.21±0.02	0.22±0.01
Pancreatic trypsin	0.20 ±0.06 ^{ab}	0.27±0.03 ^a	0.16±0.02 ^b	0.29±0.03 ^a

Items	LT	MT	HT	LL	ML	HL
Intestinal amylase	0.60±0.05	0.64±0.04	0.58±0.0	0.59±0.05	0.64±0.04	0.59±0.05
Pancreatic amylase	0.77±0.02	0.78±0.01	0.79±0.01	0.77±0.02	0.78±0.01	0.77±0.01
Intestinal lipase	132.24±6.64	144.40±6.74	149.78±8.33	157.59±5.39	144.40±6.74	125.81±4.07
Pancreatic lipase	141.70±4.09 ^b	217.58±4.15 ^a	230.13±4.78 ^a	163.13±6.98 ^b	217.58±4.15 ^a	218.47±5.15 ^a
Proventriculus pepsin	5.85±0.69 ^b	6.39±0.43 ^{ab}	8.69±0.45 ^a	5.63±0.64	6.39±0.43	5.94±0.26
Intestinal trypsin	0.22±0.01	0.22±0.01	0.22±0.02	0.22±0.02 ^a	0.22±0.01 ^a	0.16±0.02 ^b
Pancreatic trypsin	0.28±0.06	0.29±0.03	0.22±0.02	0.22±0.04	0.29±0.03	0.24±0.05

Conclusion

Long-term treatment of TP and LB improved lipid metabolism, activity of digestive enzymes, and intestinal inflammatory status, which might be associated with the NF- κ B signal.